Gas Journal

VOL. 290. 109th YEAR. LONDON, JUNE 19, 1957. No 4[illegible] PRICE 1/6

PUBLIC LIBRARY
DETROIT

The Continuous Vertical Retort Installations at the Litchurch Works of the East Midlands Gas Board

WOODALL-DUCKHAM

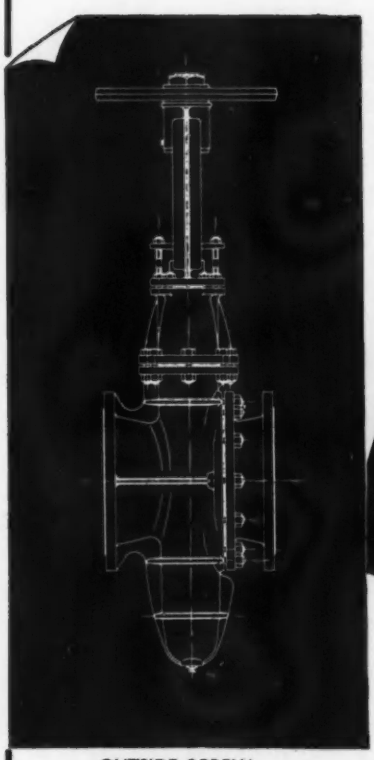
CONSTRUCTION COMPANY LTD

Woodall-Duckham House, 63-77 Brompton Road, London, S.W.3
Telephone: KENsington 6355 (14 lines) *Telegrams: Retortical (Southkens) London*

THE DONKIN "CL" VALVE

Double-faced modern H.P. design—Corrosion resisting steel door—Special resilient non-metallic composition seats, self-lubricated—Seats enclosed and protected from dust and dirt in both open and closed positions—Simple and robust in construction—Positive in operation—No internal operating mechanism exposed to gas stream—No wedges or springs—Spindle can be re-packed in the open or closed position—Standard test pressure 100 lbs. per sq. in. air—Internal or external screw with or without indicator—Can be adapted for under-pressure connections.

VERTICAL



OUTSIDE SCREW

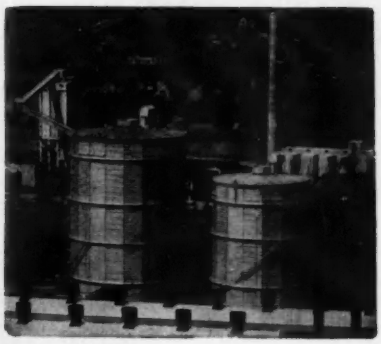
HORIZONTAL

SIZES 3" to 24"

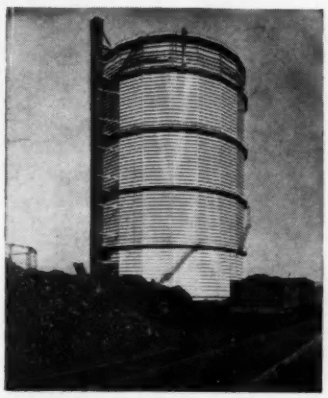
THE BRYAN DONKIN CO. LTD. - CHESTERFIELD

SPIRALLY-GUIDED

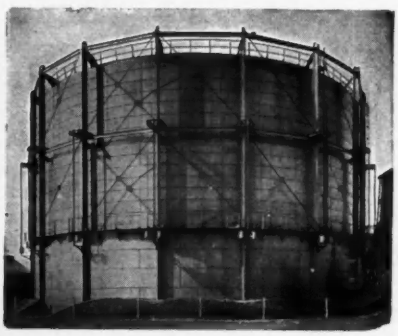
SPIRALLY-GUIDED



WATERLESS (M.A.N.)



WATERLESS (M.A.N.)



FRAME-GUIDED

GASHOLDERS

by DEMPSTERS of MANCHESTER

We have been building spirally-guided gasholders for over 66 years and were pioneers in this form of construction.

We are also builders of frame-guided, high-pressure, and waterless (M.A.N.) gasholders and, with the exception of the last mentioned, we can supply all these various types of gasholders in either riveted or welded construction.

The above illustrations show but a few of the very many spirally-guided gasholders and waterless gasholders built by us.

Your enquiries and orders will be welcomed by :—

R. & J.

DEMPSTER

LIMITED

Constructional Gas and Chemical Engineers

MAKERS OF HIGH QUALITY
BY-PRODUCT and CHEMICAL PLANT - CONDENSERS - CONNECTIONS and VALVES - DETARRERS - GASHOLDERS - IRON CASTINGS - PURIFIERS STILLS - TANKS - WASHERS - WELDED and RIVETED STEELWORK

GAS PLANT WORKS : NEWTON HEATH

MANCHESTER 10

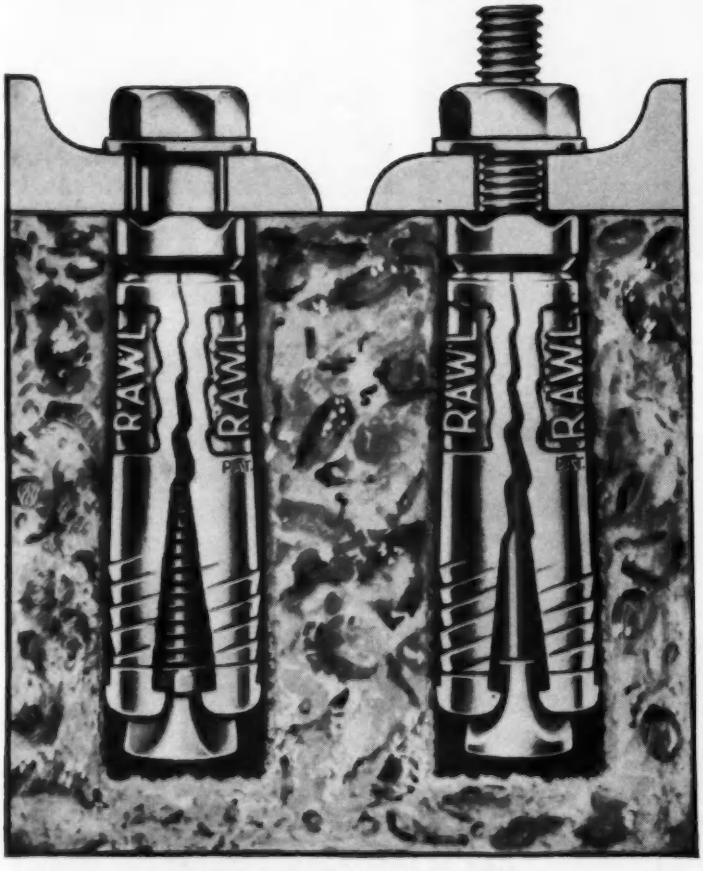
Telephone : COLlyhurst 2334, 5 & 6
Telegrams : "SCRUBBER, MANCHESTER 10"

London Office : 34 VICTORIA STREET, S.W.1
Telephone : ABBey 4426 Telegrams : "Scrubber, Sowest, London"

RAWLBOLTS

for SPEED and STRENGTH

NO COLD CHISELLING !
NO GROUTING IN !
NO WAITING for cement to harden!



FOR SPEED. If you grout in ragbolts for fixing a machine you have to wait at least *3 days* before this machine can be put into production. If, on the other hand, you use Rawlbolts the machine can be put into production in much less than *3 hours*. Quite apart from this you can move the machine to another position without causing damage to the floor should this subsequently be proved desirable.

FOR STRENGTH. Rawlbolts have earned a sterling reputation for strength and reliability throughout the world—they are used by the million every month. Rawlbolts grip by *expansion*—their strength as a fixing is based on the enormous compressive strength of concrete itself. There are 2 types—as illustrated—loose bolt type shown on left and bolt projecting type on right.

Write now for the latest Rawlplug literature and chart on Rawlbolts and many other time-saving fixing devices.

TOOLS THAT SAVE TIME. For hole-boring there's a big range of high efficiency Rawlplug tools for use by hand, electric or air power. All are really tough, long-lasting tools, designed by the world's leading specialists in fixing methods for maximum performance and maximum economy.

RAWLPLUG

THE WORLD'S LARGEST MANUFACTURERS OF FIXING DEVICES

B 544

THE RAWLPLUG COMPANY LIMITED, CROMWELL ROAD, LONDON, S.W.7

MAIN-LAYING THROUGHOUT THE COUNTRY

yet another contract entrusted to

'Norwest' are handling important contracts in the wide-scale development of the Gas Industry, both in laying mains and concrete construction. 'Norwest' service ensures competitive tenders and efficient and speedy work under difficult working conditions. In 35 years the Norwest Company has grown from a modest cable and pipe-laying concern to a civil engineering and building organisation of national significance. In all parts of the country where modern development is in progress the golden Norwest diamond is a symbol of efficient civil engineering.

NORWEST THE MAIN LAYING PEOPLE

NORWEST CONSTRUCTION CO LTD
LIVERPOOL 21 · TELEPHONE WATERLOO 6511

CVS-18

The MAPEL Welding Inspection Service to Industry

MAPEL offer a comprehensive welding inspection service, which incorporates non-destructive examination visually and by radiography to guarantee that the highest standards and specifications are adhered to.

Wherever welding is carried out, whether it be on pipelines, vessels, storage tanks, structural work or shipbuilding, the MAPEL Service will guarantee you high quality workmanship from start to completion. Further information will gladly be supplied on request.

Note : MAPEL also provides a comprehensive Cathodic Protection Service and Leak Detection.

MAPEL

METAL and PIPELINE ENDURANCE LTD

Head Office: Artillery Mansions, Victoria Street, S.W.1.
Telephone: ABBey 6056 *Telegrams:* METALDURE, SOWEST, LONDO
Divisional Office: 30 London Road, Woolmer Green, Herts.
Telephone: Knebworth 3083 (4 lines) *Telegrams:* METALDURE, KNEBWORT
South Western Area Office: Aller, Nr. Newton Abbot, Devon. *Telephone:* Kingskerswell 2273
Newcastle Office: 38/39 Exchange Buildings, Queen Street, Newcastle-upon-Tyne 1.
Telephone: Newcastle 2/9068

Manvers Centralization Scheme :

From the top of the newly constructed Coal preparation plant: a small section of the immense network of railway sidings.

The supply and installation of these sidings and the adjoining trackwork for the new Coal Carbonization and Benzole Rectification Schemes were entrusted to the Eagre Construction Co. Ltd., by the National Coal Board. Over 9,000 tons of Iron and Steel were used in the construction of the forty miles of track and 230 turnouts and Special Point and Crossing layouts comprising the combined railway Sidings.

Eagre's skilful planning and practical experience in the day-to-day working of Colliery Sidings ensured that this vast scheme was laid efficiently to schedule, and without the slightest interruption of existing Colliery traffic.

Photograph by courtesy of National Coal Board

for a complete Track Service

Work begins at Cadeby: The National Coal Board again entrusts the Eagre Construction Co. Ltd. with a similar project. Earthworks, Drainage, Track Laying and ancillary works for thirteen miles of Sidings are now in progress at Cadeby Main.

In addition to its activities in the Nation's Coalfields the Eagre Construction Co. Ltd. has worked continuously during the past ten years for British Railways, the Gas Board, the United Steel Companies, and has carried out large Power Station Projects for the Central Electricity Authority.

SURVEY
DESIGN
SUPPLY
INSTALLATION

EAGRE

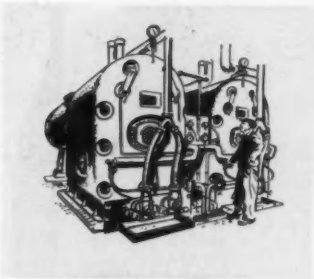
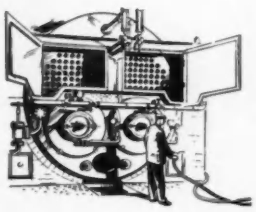
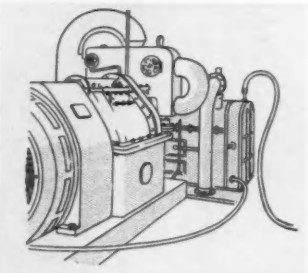
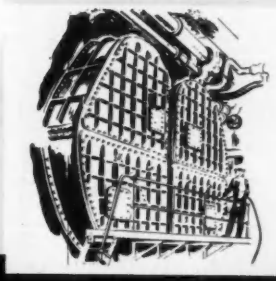
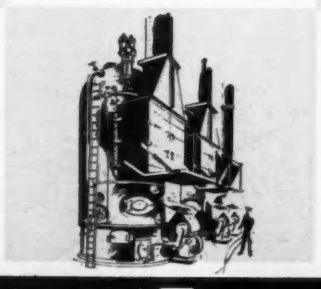
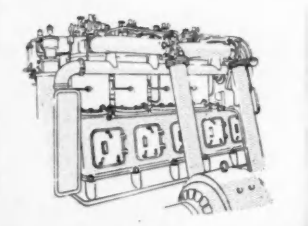
Photograph by courtesy of National Coal Board

Whatever the magnitude of your Siding requirements, be sure to consult

EAGRE CONSTRUCTION CO. LTD
East Common Lane SCUNTHORPE Lincs. Tel. 4513-7

SERVICE TO INDUSTRY

TO KEEP YOUR PLANT 'CLENSŌL-CLEAN'

CLENSŌL

DE-RUSTING · DE-SCALING DE-GREASING and WATER TREATMENT SERVICES

Contractors to The Admiralty — War Dept. — Air Ministry — Ministry of Supply, Works & Transport—U.K. Atomic Energy Commission—Central Electricity Authority—Gas, Coal & Hospital Boards—Local and Water Authorities—the leading shipping, oil and industrial firms.
Approved by the majority of the boiler, process, refinery, production and associated plant manufacturers, insurance companies etc.

CLENSŌL—SERVICE TO INDUSTRY

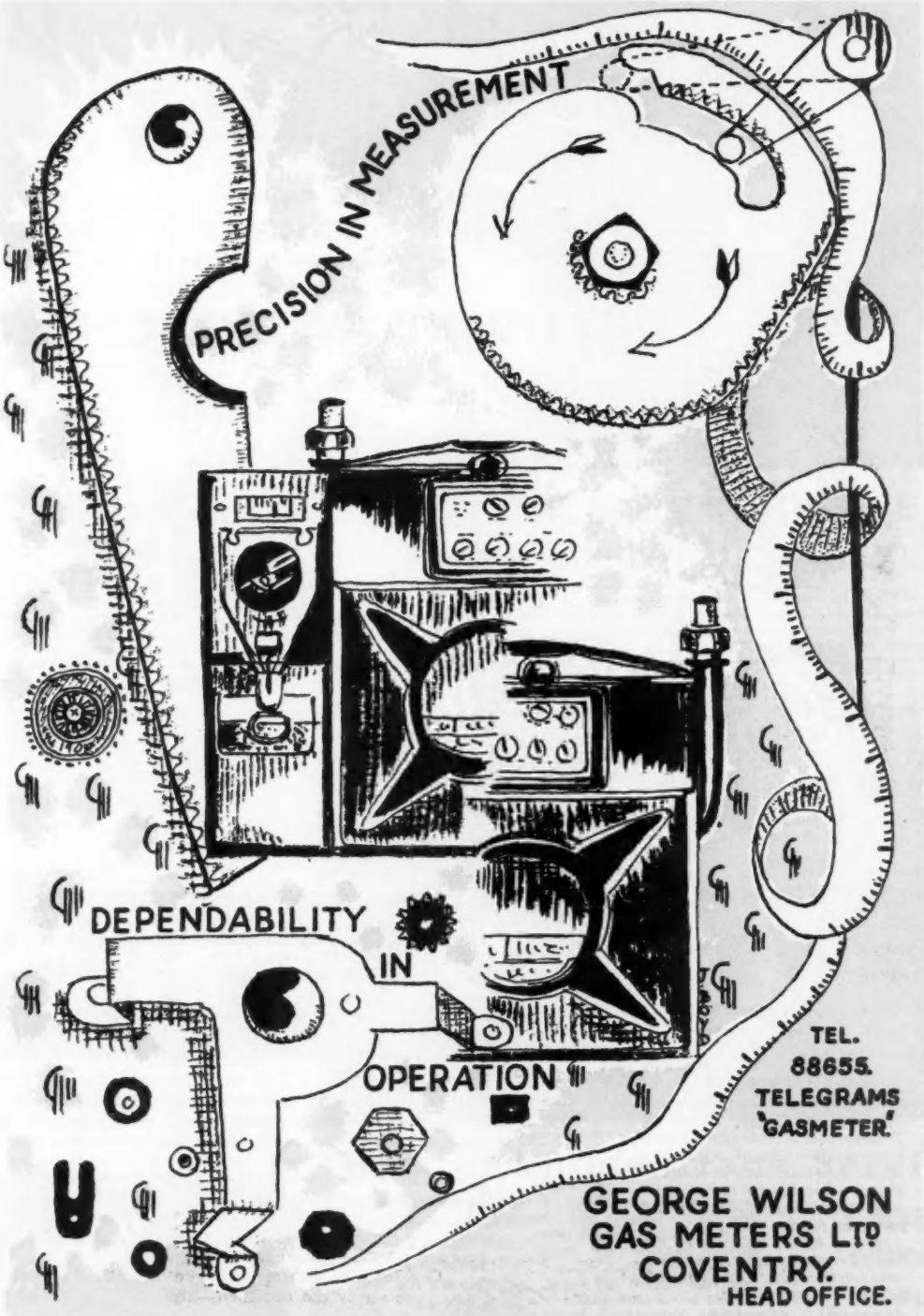
CLENSŌL specialist services are available "round-the-clock" for the speedy and efficient removal of deposits from all types of plant, pipework, supply and discharge mains etc., including "in situ" removal of corrosion products, mill scale from new plant, following installation. All work is carried out by fully qualified and mobile teams under the supervision of Area Engineers. CLENSŌL materials are the result of 30 years of continuous specialised research, into practical and technically efficient methods of application for the 'pre-service' or routine removal of:— rust, mill and mineral scale, grease, oil, tar, beer and milk stone gel, sugar and effluent deposits, etc.

Our Technical Representatives are "on call" at all times for free survey and discussion — throughout the British Isles and Overseas.

HEAD OFFICE—40 BERKELEY SQUARE, W.1
'phones: HYDE PARK 4521-2-3
'grams: CLENSOPIPE, WESO, LONDON

Depots at—London, Manchester, Bristol. Birmingham, Cardiff, Glasgow, Hull, Belfast.

Represented throughout most overseas territories.


PRECISION IN MEASUREMENT
DEPENDABILITY
IN
OPERATION
TEL.
88655.
TELEGRAMS
'GASMETER.'
GEORGE WILSON
GAS METERS LTD
COVENTRY.
HEAD OFFICE.

Why "BROOMWADE" Rotary AIR COMPRESSORS will Save You Money!

- CHEAPER AND SIMPLER TO MAINTAIN
- LIGHTER IN WEIGHT AND SMALLER IN SIZE
- LOWER FUEL CONSUMPTION

Type WR120 two-stage rotary air compressor, delivering 120 cu. ft. free air per minute at 100 lb. per sq. in. pressure. Powered by Ford diesel engine.

The NEW range of "BROOMWADE" ROTARY Air Compressors is now at your disposal. After considerable research and development, involving a careful study of ROTARY Air Compressors and the problems associated therewith, the "BROOMWADE" organisation has developed up-to-date ROTARY plants embodying those features which combine to give ECONOMICAL, EFFICIENT, and RELIABLE performance. This has been achieved after numerous trials over long periods under widely varied working conditions. The range includes plants from 120 cu. ft. to 600 cu. ft. F.A.D.

WRITE NOW for full details of this NEW range

"BROOMWADE"

AIR COMPRESSORS & PNEUMATIC TOOLS

Your best investment

BROOM & WADE LTD • P.O. BOX No. 7 • HIGH WYCOMBE • ENGLAND

Telephone: High Wycombe 1630 (10 lines). *Telegrams: "Broom", High Wycombe, Telex.*

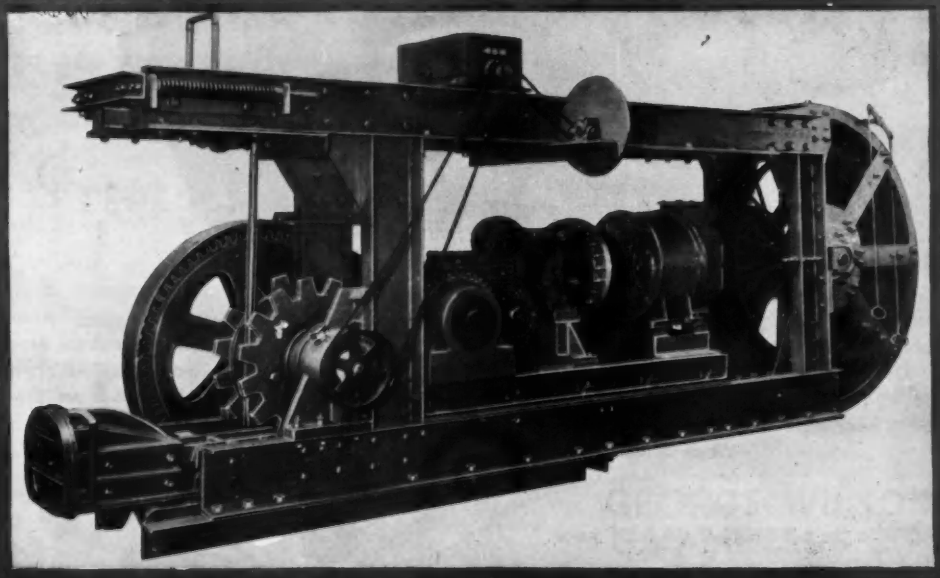
495 SAS

Why Fluidrive

- Smooth application of power minimises "stickers".
- Motor and mechanical parts are protected if ram is stalled.
- Electrical and mechanical maintenance is considerably reduced.

IN

COAL-GAS RETORT DISCHARGERS



Fluidrive in Ride & Bell Discharging Ram.

FLUIDRIVE ENGINEERING CO. LTD.

FLUIDRIVE WORKS, WORTON ROAD, ISLEWORTH, MIDDLESEX

PIONEERS OF THE GAS INDUSTRY

Illustation lighting his office at Redruth with Gas — 1792.

William Murdock

1754 - 1839 — Founder of the Gas Industry.

Born at Bello Mill in the village of Lugar, Ayrshire, William Murdock has been described as the greatest mechanically inventive genius that Scotland has produced. Whilst employed by Boulton & Watt in the erection of their pumping engines for the Cornish tin and copper mines, he carried out a series of experiments in the production of gas from coal, peat, wood and other inflammable substances. In 1792 he lighted his house and office in Redruth with gas produced by carbonising coal in an iron retort over an open fire. He was subsequently responsible for the installation of many gas producing plants for lighting individual industrial premises.

As an industry grows in magnitude and importance, so its needs become more complex and exacting. Where once simple improvisation was sufficient, now specialisation of the highest calibre is the order of the day. Among the specialised products used by the Gas Industry we are proud to number Audco Lubricated Valves, recognised as the very best of their class.

AUDCO valves

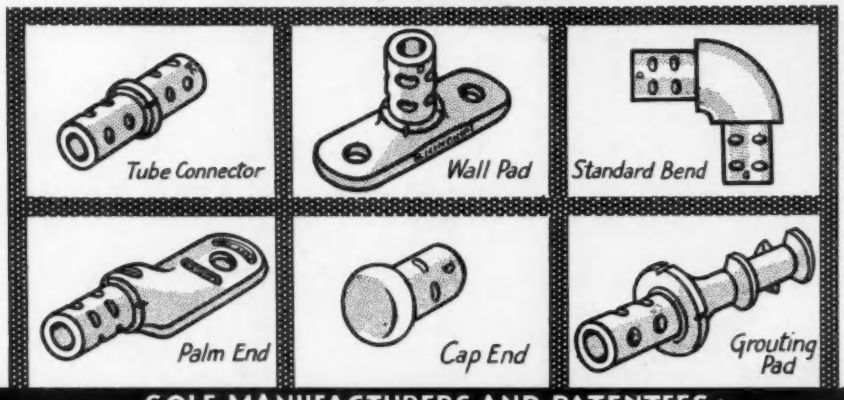
LUBRICANT SEALED FOR A POSITIVE SHUT OFF

AUDLEY ENGINEERING CO., LTD., NEWPORT, SHROPSHIRE

LIONGRIP TUBULAR HANDRAILING

A new system for easy and economical erection of Tubular Handrailing incorporating Liongrip patented fittings.

The top rail is continuous and free from obstruction.



SOLE MANUFACTURERS AND PATENTEES:

LIONWELD LIMITED

MARSH ROAD, MIDDLESBROUGH Tel. 3657

SIMON

PATENT AUTOMATIC COKE WEIGHER

Approved by the Board of Trade and stamped by the Weights and Measures Authorities.

Capacity: 28 to 112 lbs. per discharge (nett).

Speed of Weighing: Up to six weighings per minute.

Guaranteed accuracy and continuity of operation.

Machines may be seen working by appointment.

•

RICHARD SIMON & SONS, LTD.

PHOENIX WORKS, VERNON ROAD

BASFORD, NOTTINGHAM

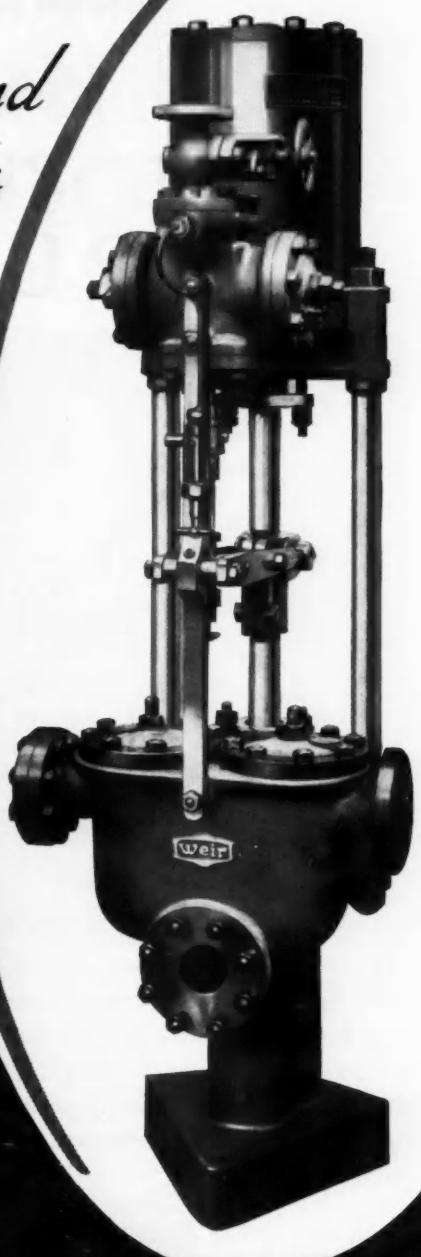
Telephones: 75136-7-8

By Courtesy of the North Western Gas Board

Universally recognised as the most reliable and efficient of their class

WEIR

Direct-Acting FEED PUMPS



Suitable for all types of boilers.

Standard sizes and capacities for discharge pressures up to 300 lb./sq. in.

Special designs for higher pressures.

Weir

FEED HEATERS
FEED REGULATORS
EVAPORATING AND DISTILLING PLANTS
OIL FUEL PUMPS
DE-AERATORS
REGENERATIVE CONDENSERS
ETC.

G. & J. WEIR LTD.
CATHCART : GLASGOW

KIRKHAM, HULETT & CHANDLER LTD

UNION FOUNDRY, MANSFIELD, NOTTS.

TAR EXTRACTORS

PREHEATERS

PURIFIERS

WASHERS

CONDENSERS

BENZOL PLANT

Tel: MANSFIELD 1256/7 Grams: CASTINGS MANSFIELD

LONDON OFFICE

Stafford House, Norfolk Street, Strand, W.C.2.

Phone: Temple Bar 9910 Grams: Washer, Estrand, London.

DUST & FUME EXTRACTION

DRUMMOND plants are satisfactorily dealing with dusts and fumes from boilers, furnaces, cupolas, converters, coke and coal handling, shot blasting, foundries, grinding, polishing, plating, paint manufacture and spray painting.

Instead of enormous clouds of dust, the particles are converted into a wetted cake that can never rise again to become a nuisance.

THESE HEAPS, each one a day's accumulation, represent a dense cloud of between ten and twenty million cubic feet of air.

We will gladly discuss your requirements with you.

DRUMMOND PATENTS LTD.

5, GREAT WINCHESTER STREET, LONDON WALL, LONDON, E.C.2.

Telephone: LONDON WALL 4432 & 2626

Northern 141, Royal Exchange, Cross Street, Manchester, 2. Telephone: Deansgate 7015

Offices: Market Chambers, New Market Street, Newcastle-upon-Tyne, 1. Telephone: Newcastle 2/3837

3 ST. JAMES'S SQ. S.W.1 D&C TRAFALGAR 7833

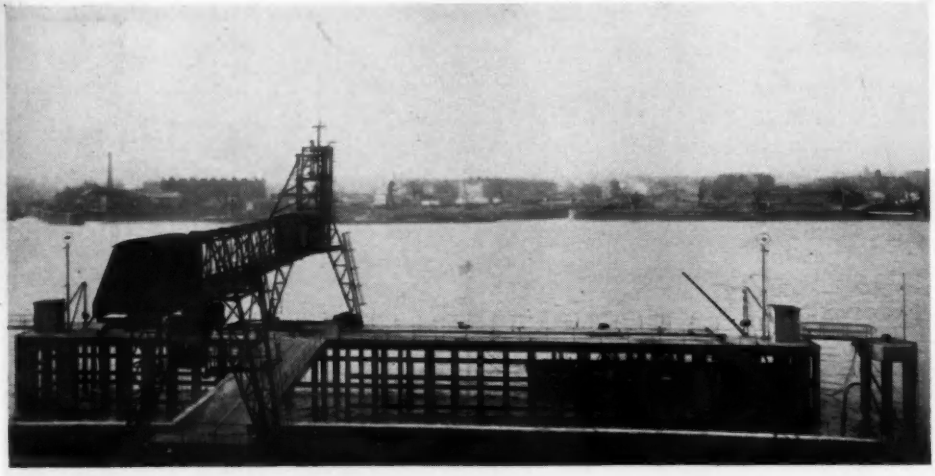
THE
DEMOLITION & CONSTRUCTION
COMPANY LIMITED

Civil Engineering, Building and Public Works Contractors

REBUILDING of COMPLETE GASWORKS

MODERNIZATION and EXTENSIONS

A Coke Bunker



New Jetty on River Thames for the South Eastern Gas Board

FWS

400 P.S.I.G.!

. . . . yet another proof of high quality work backed by 43 years' experience.

400 P.S.I.G. was the test pressure applied to the new 18" 7,500 yard gas main laid by William Press & Son Ltd. for the North Thames Gas Board at High Wycombe. As it is envisaged that this main will be used as a high pressure holder storing 730,000 cubic feet of gas, the highest degree of workmanship was necessary.

CAST IRON & STEEL MAINLAYING - ALL TYPES OF INDUSTRIAL PIPE-WORK INSTALLATION - PIPE FABRICATION TO LLOYDS' SPECIFICATION

WILLIAM PRESS & SON LTD. MAINLAYING

William Press and Son Ltd.

22, Queen Anne's Gate, Westminster, London, S.W.1. Tel.: WHitehall 5731 (7 lines). Telegrams: UNWATER, PARL, LONDON.
Willoughby Lane, Tottenham, N.17. Telephone: TOTtenham 3050 (12 lines). Telegrams: UNWATER, SOUTHTOT, LONDON.

REF. No. IND/FB/89

HUWOOD Conveyors

In growing demand in the GAS and allied Industries

The best form of short distance transport

HUGH WOOD & CO., LTD., GATESHEAD-ON-TYNE, 11.

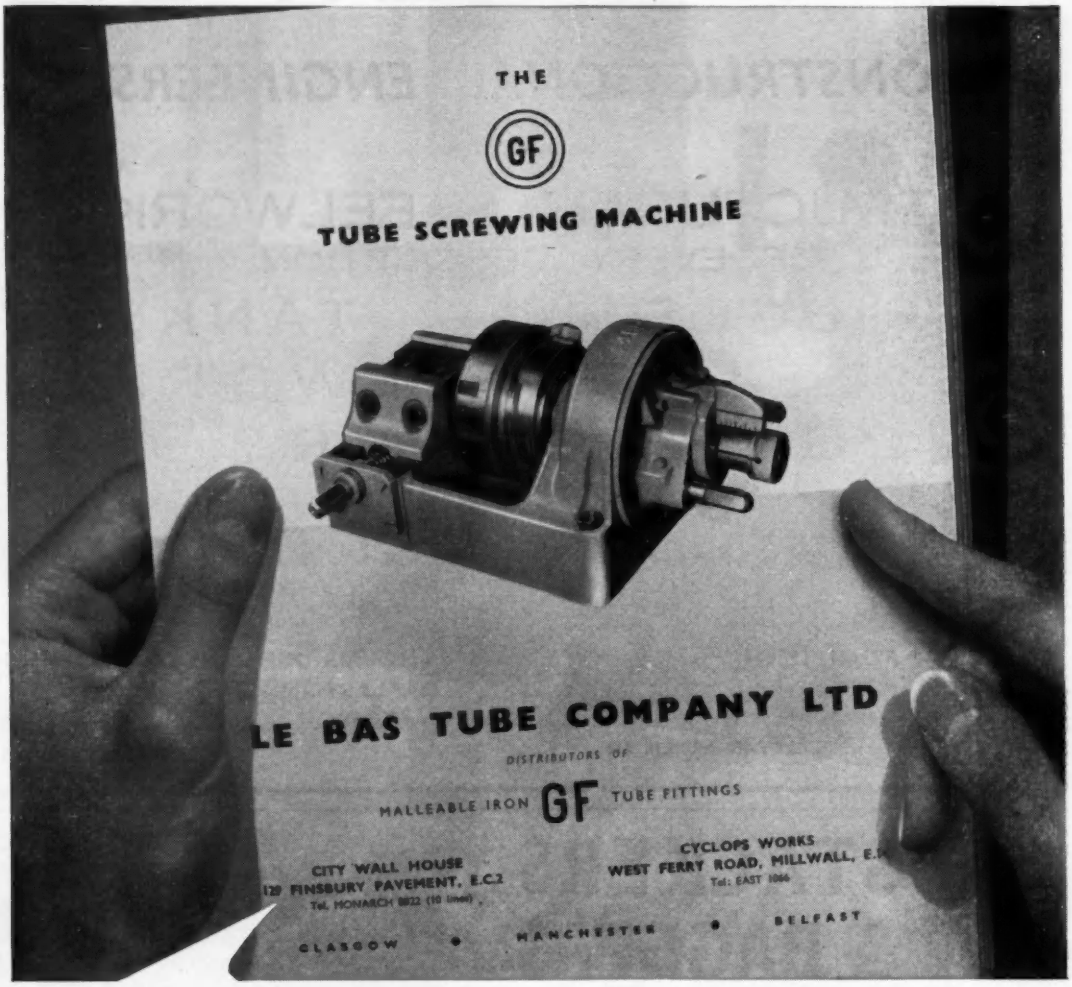
gas measurement

It is prolonged accuracy over a long meter life which counts.

Experience, technical resource and modern production techniques within the Smith Meters organisation have evolved meters to meet this demand.

This illustration shows the D·05 prepayment meter by

SMITH METERS LIMITED
186 Kennington Park Road, London, S.E.11



This will tell you how to cut the cost of screwing **perfect** pipe threads **on the site** or in your workshop

★ *Send for it today and ask us for a free demonstration*

LE BAS TUBE COMPANY LIMITED

CITY WALL HOUSE · 129 FINSBURY PAVEMENT · LONDON · E.C.2
Telephone: MONarch 8822 · · Telegrams: Lebasco, Avenue, London
LONDON · MANCHESTER · GLASGOW · BELFAST

C

E. C. & J. KEAY LTD.

CONSTRUCTIONAL ENGINEERS

STRUCTURAL STEELWORK
OF EVERY DESCRIPTION
BRIDGES • TANKS
STEEL PLATEWORK
GASHOLDERS
ETC., ETC.
Supplied & Erected

HEAD OFFICE: "RUNNYMEDE"
HENLEY-IN-ARDEN
SOLIHULL, WARWICKSHIRE.
Telephone: HENLEY-IN-ARDEN 211

WORKS: JAMES BRIDGE
DARLASTON
STAFFS.

BRANCH OFFICES:
LONDON
25 VICTORIA ST., S.W.1
and SOUTHAMPTON

C & T LTD.

STACKERS & BAGGERS

'BIG WALRUS' Fully Mobile STACKER
★ STACKS 120 TONS OF COAL PER HOUR!

This C & T Stacker is Electric or Diesel operated. When feeding from usual Tipping Lorries, ramps are unnecessary, as opening in extra wide hopper permits direct access from the front at low level. Rubber sealing flaps around hopper opening and steel skirt-plates on belt to reduce spillage to negligible proportions.

MOBILE BAGGING UNITS

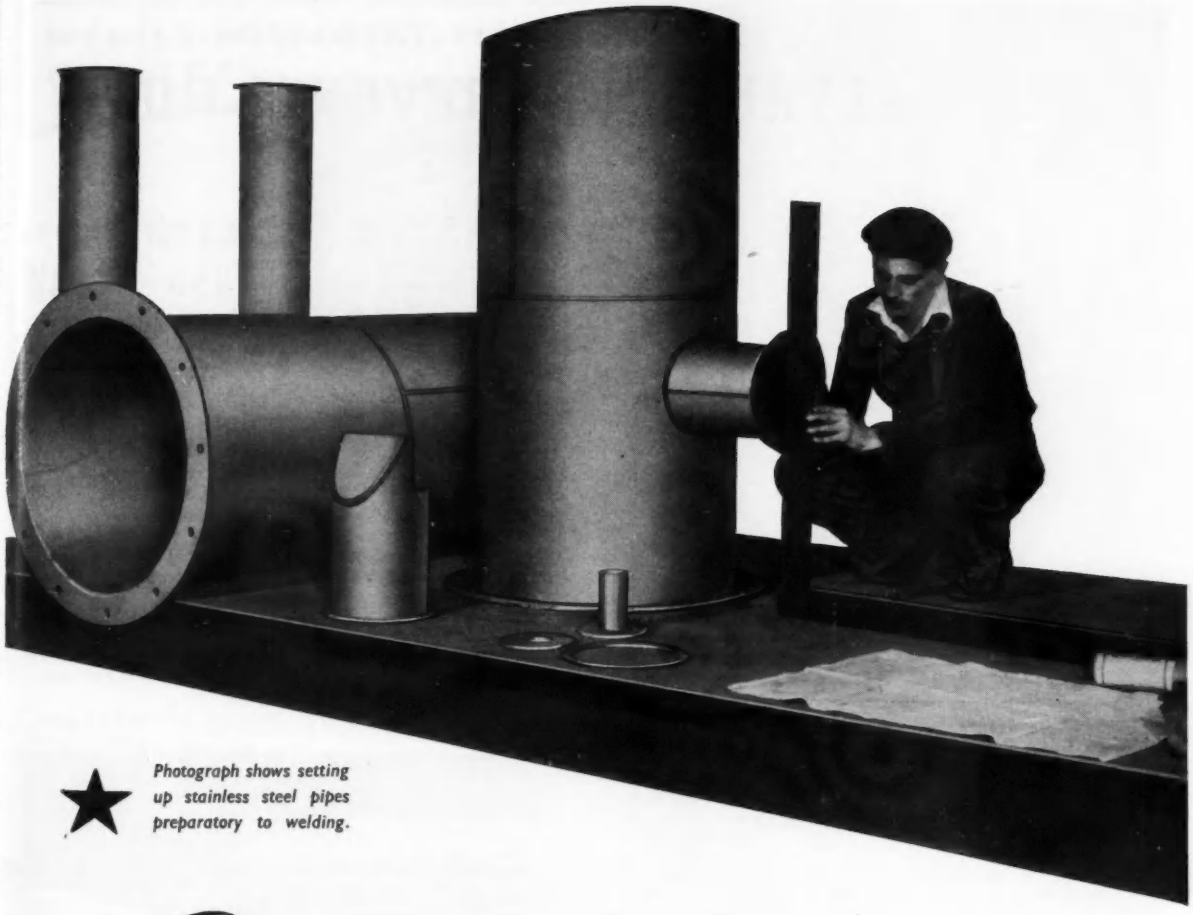
Speed Handling · Reduce Costs!

★ CAN BAG AND WEIGH UP TO 12 TONS OF COAL IN 34 MINUTES!

This C & T Junior Bagging Unit designed to handle 1 cwt. Coal Bags, can cope with pieces up to 8" max. size. The unit incorporates Electrically Vibrated Bagging Chutes giving fine control over material being bagged—a footswitch leaving the operators' hand free to hold bag.

Full particulars of these equipments from:

CRONE & TAYLOR (ENGINEERING) LTD.
SUTTON OAK, ST. HELENS, LANCS.
Phone: St. Helens 3283.



Photograph shows setting up stainless steel pipes preparatory to welding.

Fabrication in STAINLESS STEEL

Widnes Constructional Department is manned by a staff of highly skilled designers and erectors, and is equipped for the production of Tanks for storage or mounting on road vehicles, High and Low Pressure Vessels, Adsorbers, Vertical Air Heater Shells, Crystallizers, Stills, Viscose Kettles, etc., in Stainless steel.

ESTABLISHED 1841

WIDNES FOUNDRY & ENGINEERING Co LTD

LUGSDALE ROAD WIDNES LANCS

TELEPHONE: WIDNES 2251/4 TELEGRAMS: "FOUNDRY WIDNES

W 41

HOT GALVANIZING PREVENTS RUST

ASK ANY MINER ABOUT RUST—he knows its dangers on shaft-cages, underground railways and mine cars. He also knows that hot galvanizing is the surest means of preventing rust. In fact, wherever steel is used . . . in factories and on railways, on ships and on farms . . . there is no substitute for hot galvanizing. The tenacity and durability of *hot* galvanizing ensure lasting protection with minimum maintenance.

Protection in depth

Hot galvanizing gives defence in depth. The firmly alloyed zinc keeps out rust—tightly sealing crevices and seams. And if the coating *does* get damaged the steel still won't be attacked because the zinc protects it sacrificially. Hot galvanizing *saves* steel—by eliminating the need for large corrosion allowances and the replacement of rusted parts. Hot galvanizing resists normal atmospheric conditions *twenty times better than steel.*

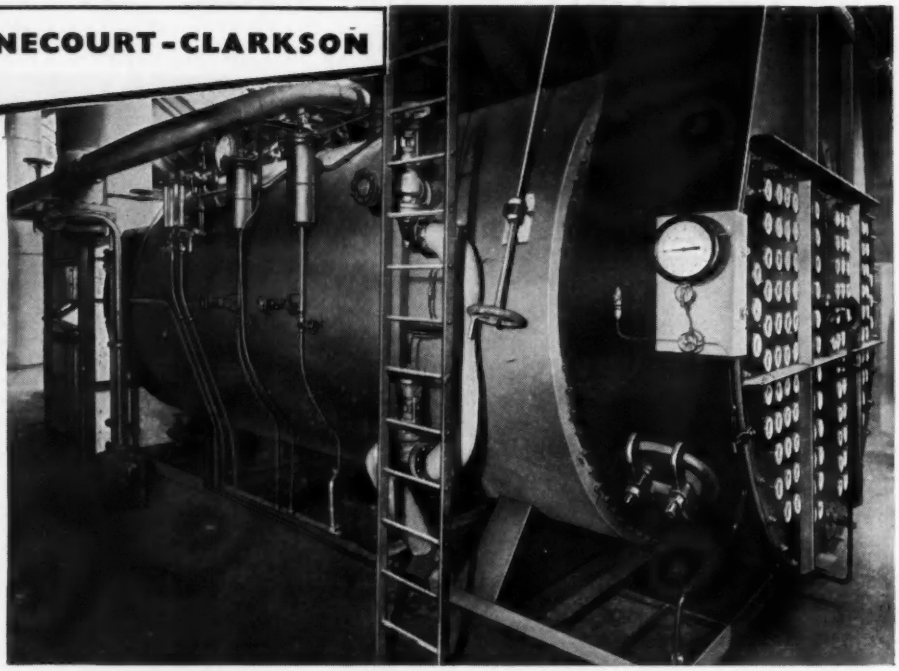
Hot Dip Galvanizers Association

The Hot Dip Galvanizers Association, a non-trading body, welcomes enquiries. Write to 34 Berkeley Square, London, W.1 Tel. Grosvenor 6636

Member of the Zinc Development Association

SPENCER-BONECOURT-CLARKSON
LIMITED

SPECIALISTS IN WASTE HEAT RECOVERY PLANT



The illustration shows one of the Spencer-Bonecourt waste-heat boilers at Stoke-on-Trent Gas Works. Similar units are installed on all the Glover-West Continuous Vertical carbonising plant in this works.

LYNTON HOUSE, 7-12 TAVISTOCK SQUARE, LONDON W.C.1.

Telephone : EUSton 4321
Telegrams : HEATECON, PHONE, LONDON

***ROTOKLENE* self-cleaning STRAINERS**

The ROTOKLENE'S special vee-section wire winding offering minimum resistance to flow and instantly cleaned.

This self-cleaning strainer has many unique features which may be valuable in your business. It is widely employed on fuel and lubricating oil systems, water, soap, paint, tar, chemicals and many other liquids and has proved its efficiency over a long period.

Unique cleaning method - extremely simple and reliable. Can be belt or motor driven where constant cleaning is necessary.

May we send you details of its novel and extremely effective principle of working?

ASHWORTH & PARKER LIMITED
RIVERSIDE WORKS · BURY · LANCASHIRE

Wales Gas Grid wrapped in FIBREGLASS TRADE MARK

More efficient production, collection and distribution of gas and a saving of 76,000 tons of coal annually will result from the introduction of the new Wales Gas Grid. It consists of 130 miles of high pressure pipeline which provides supplies of gas for present and future commercial, industrial and domestic needs. The problem of protecting the pipes against the corrosive action of aggressive soils, has been solved by wrapping them in Fibreglass. It is the first time that this method has been applied in the United Kingdom.

FIBREGLASS LIMITED.
ST. HELENS, LANCS. ST. HELENS 4224. FACTORIES AT ST. HELENS, LANCS. AND POSSILPARK, BIRKENHEAD AND BIRMINGHAM

INDEX TO 'JOURNAL' ADVERTISERS

	Page
A	
A.C.E. Machinery Ltd.	
A.P.V. Company Ltd.	
Abbott, Birks & Co. Ltd.	
Acme Wringers Ltd.	
Aerogen Co. Ltd.	
Alder & Mackay Ltd.	
Allan Taylor (Engineers) Ltd.	
Aquafont Industries Ltd.	
Ascot Gas Water Heaters Ltd.	
Asmore, Benson, Pease & Co.	
Ashworth & Parker Ltd.	659
Aspinall's (Paints) Ltd.	
Associated Lead Manufacturers Ltd.	
Atlas Preservative Co. Ltd.	
Audley Engineering Co. Ltd.	647
Automotive Products Ltd.	
Averill, C. R., Ltd.	
B	
Bale & Church Ltd.	707
Balfour, Henry, & Co. Ltd.	
Bells Asbestos & Engineering Co., Ltd.	
Berry's Foundry (1949) Ltd.	
Birtley Engineering Ltd.	
Blakeley, Firth, Sons & Co. Ltd.	
Bolton's Superheater & Pipe Work Ltd.	
Borchardt, F.A., Ltd.	
Bratt Colbran Ltd.	
Bray, George, & Co. Ltd.	
Bristol Pneumatic Tools Ltd.	
British Carbo-Norit Union Ltd.	
British Gas Purifying Materials Co.	
British Jeffrey-Diamond Ltd.	
British LaBour Pump Co. Ltd.	681
British Paints Ltd.	
British Rototherm Co. Ltd.	
British Thomson Houston Ltd.	
British Tyre & Rubber Co. Ltd.	
British Vacuum Cleaner & Engineering Co. Ltd.	
Broadbent, Thomas, & Sons Ltd.	
Broom & Wade Ltd.	645
Brown, J., & Co. Ltd.	710
Bugden, Thos., & Co.	
C	
Cambridge Instrument Co. Ltd.	
Cannon (G.A.) Ltd.	
Causeway Reinforcement Ltd.	
Cementation Co. Ltd.	
Chemical Engineering Wiltons Ltd.	
Cinema-Television Ltd.	
Clapham Bros. Ltd.	
Clayton, Son & Co. Ltd.	674, 675
Cleckheaton Engineering Co. Ltd.	707
Clensol Ltd.	643
Clifford Engineering Co. Ltd.	
Cochrane (Middlesbro') Foundry Ltd.	
Cohen, George, Sons & Co. Ltd.	
Concrete Proofing Co. Ltd.	
Consett Iron Co. Ltd.	
Cort, Robert, & Son Ltd.	699
County Chemical Co., Ltd.	
Crane Ltd.	
Crone & Taylor Ltd.	656
Crosby & Co. Ltd.	
Crossley Bros.	
Crosthwaite Furnaces & Scriven Mach. Tools Ltd.	
Cutler, Samuel, & Sons Ltd.	
Cuxson, Gerrard & Co. Ltd.	
D	
Davenport Engineering Co. Ltd.	676
Davey, Paxman & Co. Ltd.	
Davies Bros. (Denton) Ltd.	
Dean, W. H., & Son Ltd.	
De la Rue, Thomas, & Co. Ltd. (Gas Group)	
Demolition & Construction Co. Ltd.	651
Dempster, R. & J., Ltd.	639
Dempster, Robert, & Sons Ltd.	700
Denison & Son Ltd.	
Derbyshire Silica Firebrick Co. Ltd.	
Diaphragm & General Leather Co. Ltd.	
Donkin (The Bryan) Co. Ltd.	Cover II
Douglas, Wm., & Sons Ltd.	
Drakes Ltd.	
Dresser Manufactures (England) Ltd.	
Drew, H. B., Ltd.	
Drummond Patents Ltd.	650
E	
Eagre Construction Co. Ltd.	642
Edgar, Wm., & Son Ltd.	710
Elcontrol Ltd.	
Electric Construction Co. Ltd.	672
Electroflo Meters Co. Ltd.	
Electrolux Ltd.	
Elliott Bros. (London) Ltd.	
Ether Ltd.	
Evered & Co. Ltd.	
Ewart & Sons Ltd.	
Ewart Chainbelt Co. Ltd.	
F	
Fibreglass Ltd.	660
Fisher & Ludlow Ltd.	
Flavel, S., & Co. Ltd.	
Fluidrive Engineering Co. Ltd.	646
Ford Motor Co. Ltd.	
Fowler, John, & Co. (Leeds) Ltd.	
G	
Gas Purification Ltd.	707
General Electric Co. Ltd.	
Gibbons Bros. Ltd.	
Girdex Engineering Co. Ltd.	676
Glover, George, & Co. Ltd.	
Glover, Thomas, & Co. Ltd.	664
Godfrey, Sir George, & Partners (Industrial)	
Goodall Clayton & Co. Ltd.	710
Goodyear Industrial Rubber Products Ltd.	703
Grant Lyon & Co. Ltd.	671
Graphite Products Ltd.	
Greenwood & Batley	
Green & Boulding Ltd.	707
Gunite Construction Co. Ltd.	
H	
Hamilton, A. H., & Co. Ltd.	
Hardman & Holden Ltd.	
Harris & Pearson Ltd.	710
Harris Engineering Co. Ltd.	
Harrisons (London) Ltd.	707
Harvey, G. A., & Co. (London) Ltd.	
Hick Hargreaves & Co. Ltd.	
Hills (West Bromwich) Ltd.	
Hilmor Ltd.	
Holman, Michell & Co. Ltd.	
Holmes, W. C., & Co. Ltd.	709
Hopkinsons Ltd.	
Horseley Bridge & Thomas Piggott Ltd.	
Horstmann Gear Co. Ltd.	
Hudswell, Clark & Co. Ltd.	
Hughes, F. A., & Co. Ltd.	
Humphreys & Glasgow Ltd.	
Hyde, Silas, Ltd.	
I	
I.C.I. Ltd. (Metals Division)	
Ideal Boilers & Radiators Ltd.	
Inertol Ltd.	
Ingham, John, & Sons Ltd.	
Jeavons, E. E., & Co. Ltd.	
Jeavons Engineering Co.	
Jenkins, W. J., & Co. Ltd.	
Johnson, C. H., (Machinery) Ltd.	682
Joy-Sullivan Ltd.	
K	
Keay, E. C. & J., Ltd.	656
Keelavite Rotary Pumps & Motors Ltd.	
Keir, J. L. & Co. Ltd.	677
Keith Blackman Ltd.	
Kings Patent Agency Ltd.	
King, Walter, Ltd.	707, 708, 710
Kirkham, Hulett & Chandler Ltd.	650
L	
Lafarge Aluminous Cement Co. Ltd.	
Lamont, James H., & Co. Ltd.	
Le Bas Tube Co. Ltd.	655
Lee, Howl & Co. Ltd.	
Lincoln Electric Co. Ltd.	
Lind, Peter, Ltd.	
Lionweld Ltd.	648
M	
MacLellan, George, & Co. Ltd.	
Macpherson, Donald, & Co. Ltd.	
Magnetic Valve Co. Ltd.	
Main, R. & A., Ltd	
Major Robinson & Co. Ltd.	
McNeill, F., & Co. Ltd.	
Meltham Silica Fire Brick Co. Ltd	
Metal & Pipeline Endurance Ltd.	642
Meters Ltd.	
Metropolitan-Vickers Electrical Co. Ltd.	
Midland Iron & Hardware Co. (Cradley Heath) Ltd.	707
Milne (Edinburgh) Ltd.	
Mine Safety Appliances Co., Ltd.,	
Mint, Birmingham Ltd.	
Mitchell Engineering Ltd.	
Mitchell, H., & Co.	
Moler Products Ltd.	
Monk, A., & Co. Ltd.	
Murex Welding Processes Ltd.	
N	
National Enamels Ltd.	
Neal, R. H., Ltd.	
Neville, J. C., Ltd.	680
New Conveyor Co. Ltd.	
Newton Chambers & Co. Ltd.	Cover IV
Norwest Construction Co. Ltd.	641
Nu-Swift Ltd.	
O	
Oxley Engineering Co. Ltd.	
P	
Parkinson & Cowan (Gas Meters) Ltd.	
Parkinson Stove Co. Ltd.	
Pass, E., & Co. Ltd.	706
Peebles & Co. Ltd.	
Perl Controls Ltd.	
Plenty & Son Ltd.	
Power-Gas Corporation Ltd.	
Press, William, & Son Ltd.	652
Pyrene Co., Ltd.	
R	
Radiant Heating Ltd.	
Radiation Ltd.	696, 697
Rawlplug Co. Ltd.	640
Reavell & Co. Ltd.	706
Ride & Bell Ltd.	
Roberts, R. E., & Sons Ltd.	662
Robinson, J. H., & Co. (Liverpool) Ltd.	
Royston, Geo., & Sons Ltd.	
Rozalex Ltd.	
S	
Salter, T. E., Ltd.	
Saunders Valve Co. Ltd.	
Sawyer, Geo. E., Ltd	
Scientific & Projections Ltd.	
Senior Economisers Ltd.	
Shaw Petrie Ltd.	
Shell Chemical Co. Ltd.	
Siebe Gorman & Co. Ltd.	
Sigma Instrument Co. Ltd.	680
Silvertown Rubber Co. Ltd.	
Simon, Richard, & Sons Ltd.	648
Smith & Nephew Ltd.	
Smith Meters Ltd.	
Smith, Thos., & Sons (Rodley) Ltd.,	
Spanner Boilers Ltd.	
Spencer-Bonecourt Clarkson Ltd.	659
Speedwell Gear Co.	679
Sperryn & Co. Ltd.	
Stanton Ironworks Co. Ltd.	673
Staveley Iron & Chemical Co. Ltd.	
Stein, John G., & Co. Ltd.	
Stewart & Gray Ltd.	
Stewarts & Lloyds Ltd.	
Stillite Products Ltd.	
Stoves Ltd.	
Strachan & Henshaw Ltd.	
Stringer Bros.	
Sugg, Wm., & Co. Ltd.	
Sutcliffe Speakman & Co. Ltd.	
Sutherland, A. G., Ltd.	
T	
T & T Works Ltd.	
Tangyes Ltd.	678
Teddington Refrigeration Controls Ltd.	
Thorp, Thomas, & Co. Ltd.	
Tully Engineering Co. Ltd.	
Turners Asbestos Cement Co. Ltd.	
U	
Underpressure Engineering Co. Ltd.	710
United Gas Industries Ltd.	654
United Kingdom Construction and Engineering Co. Ltd.	
V	
Vaughan, Edgar, & Co. Ltd.	
Vauxhall Motors Ltd.	
Visco Engineering Co. Ltd.	
W	
Wakelin, F. H., Ltd.	
Walker Bros. Ltd.	
Walker, C. & W., Ltd.	
Walker, Crosweller & Co. Ltd.	
Walkers (Century Oils) Ltd.	
Walkers and County Cars Ltd.	
Waller, George, & Sons Ltd.	
Walter King Ltd.	707, 708, 710
Ward, Thos. W., Ltd.	657
Weir, G. & J., Ltd.	649
Wellington Tube Works Ltd.	
West's Gas Improvement Co. Ltd.	Cover III
West's Piling & Construction Co.	
Westwood & Wrights Ltd.	
Whessoe Ltd.	
Whitley Moran & Co. Ltd.	663
Whitlock Bros. Ltd.	
Widnes Foundry and Engineering Co. Ltd.	
Wilkes, A. H., & Co. Ltd.	
Williamson, Cliff, Ltd.	
Wilson, George, Gas Meters Ltd.	644
Winn & Coales Ltd.	
Woodall-Duckham Construction Co. Ltd.	Cover I
Wood, Hugh, & Co. Ltd.	653
Y	
Yorkshire Copper Works Ltd.	
Z	
Zinc Development Association	658

Agencies	
Appointments Vacant	707, 708
Appointments Wanted	
Books	
Contracts Open	
Educational	
Fellowship	
Miscellaneous	
Patents	
Plant &c. For Sale	707
Plant Wanted.	
Publications	
Public Notice	

ring **ROBERTS** *for* **LEAD**

LEAD PIPE, LEAD SHEET & SOLDER

WHERE YOU WANT IT · WHEN YOU WANT IT

R. E. ROBERTS & SON LIMITED. BOLTON 9040

R. E. ROBERTS & SON LTD · WINDLEY STREET · BOLTON · LANCASHIRE

A MEMBER OF THE FC FIRTH CLEVELAND GROUP

CRC2R

GUNITE REPAIRS

TO STRUCTURES IN THE SERVICE OF THE GAS INDUSTRY

The Gunite Process is particularly suited for repairs to reinforced concrete structures which have been attacked by the aggressive atmosphere found in many industrial works.

We illustrate the Service Bunker at a major works in South Wales which had weathered severely in the deleterious atmospheric conditions. The structure was completely refaced by us with 2-inch reinforced gunite.

Our descriptive booklet, "The Gunite Process," is sent free on request.

WHITLEY MORAN AND COMPANY LIMITED

SPECIALISTS IN THE REPAIR OF ENGINEERING STRUCTURES

5 OLD HALL ST · LIVERPOOL · 3

Telephone : CENTRAL 7975/6
Telegrams : GUNITE, L'POOL, 3

Gas Journal

VOL. 290 *NO. 4901* *June 19, 1957*

109TH YEAR

MANAGING DIRECTOR: Clifford A. King

EDITOR: Geoffrey W. Battison

TECHNICAL EDITOR: Charles J. P. de Winton, T.D., M.A., M.Inst. Gas E., M. Inst. F.

Published by Walter King Limited,
11, Bolt Court, Fleet St., London, E.C.4

Telephone: FLEet Street 2236-7 Telegrams: Gasking, Fleet

CONTENTS

Page

EDITORIAL COMMENT

Lessons To Be Learned at Litchurch 665
Coal in 1956 666
Gas on T.V. Tonight 667
Paris, Here We Come 667

SPECIAL ARTICLE

Litchurch—the Largest Gasworks in the East Midlands .. 683

NEWS OF CURRENT EVENTS

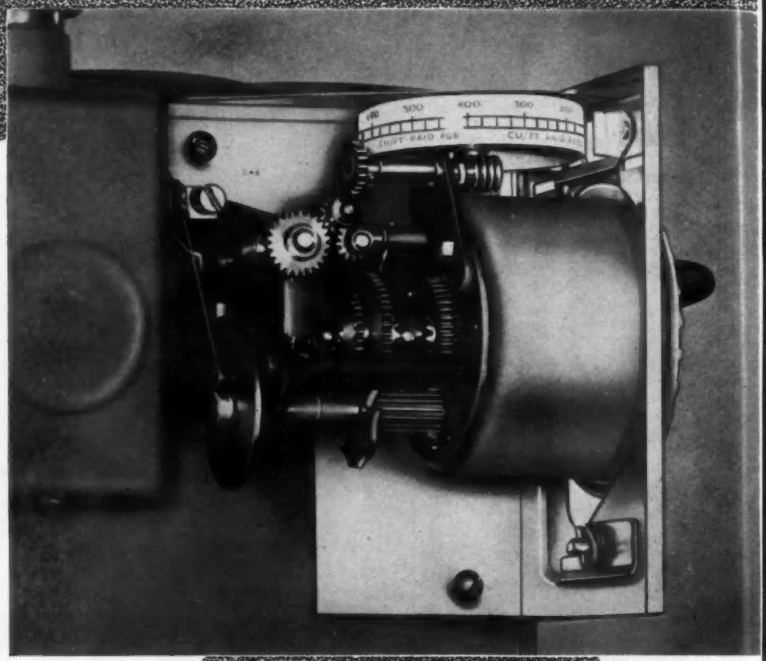
Personal 668
Obituary 668
Diary 668
New Dumfries Plant Will Cut Annual Coal Consumption by 4,000 Tons 669
The Chairman Was 'Subdued' 669
East of Scotland Juniors Hold Golf Outing 669
London and Southern Section Visit Mobil Oil Refinery .. 670
S.W.G.C.C. Meeting 670
N.T.G.C.C. Meeting 670
London Juniors Visit Brighton 670
N.E.G.B. Designs Exhibit To Serve Two Shows 693
B.M.A. Report Criticised by Gas Board Doctor 693
Company News 694
Flashback in Pictures 694
Trade News Supplement 705

TECHNICAL RECORD

Application of Electricity in the Gas Industry. By R. Hutchinson 695

PUBLISHERS' NOTICE, SEE PAGE 707

P/P mechanism with finger-tip control



The most modern movement on the market, the T.G. 'G' mechanism is compact, gives positive valve opening upon insertion of the first coin, and, with its unique double differential gear, has a single slot for dual coin operation. The 'G' movement also offers finger-tip coin entry, each coin being readily drawn in by the precision mechanism. Built to give years of trouble-free service, and withstand present day conditions, the 'G' movement is nevertheless detachable and replaceable *in situ*.

6d and 1/-
1/- and 2/-
2/- and 2/6

in the one slot

Thomas Glover & Co Ltd
Gothic Works, Angel Road, Edmonton, N.18 and Branches

Leaders in Gas Meter manufacture for over 110 years

TG3

Gas Journal

VOLUME 290. No. 4901. JUNE 19, 1957. 109th YEAR

Lessons To Be Learned at Litchurch

TO-DAY the East Midlands Gas Board is inaugurating its new gasworks at Litchurch in Derby. This is the Board's largest gas-making plant, situated at the focal point of the southern section of the Board's area, and the centre of the Notts and Derby Division. An outstanding feature of this works is the control room which makes possible the input of gas from the various coke oven plants and the co-ordination of gas supplies by way of the 'backbone' main which runs from Chesterfield to Derby and beyond into the Leicester and Northants Division, eventually making it possible to deliver gas to north Buckinghamshire.

Although gas has been made at Litchurch since 1867, there have been times when production has reached a very low ebb. In the old company days when coke oven gas was being received and distributed throughout the City of Derby, Litchurch was little more than a peak load station making gas in the winter only; the very minimum of plant was retained and kept in repair. It was for this reason that when the East Midlands Gas Board decided to extend the gas-making plant, it became necessary to raise the status of the works in the eyes of the local inhabitants, to publicise the fact that coke was about to be manufactured once more, and that its quality would be of the highest. Such a claim puts a heavy responsibility on the shoulders of the station engineer, but the choice of carbonising plant and the type of coal being carbonised have made it a comparatively easy matter for the claims to be substantiated. The few complaints of dirty, badly graded coke which have been received by the Board are a very small proportion of the number of orders executed. It was necessary also to make sure that those employed at the new works should have no cause to complain of the conditions under which they worked or be in any way prejudiced against gas manufacture in general. In Derby there are a number of large employers of labour among whom is an engineering firm demanding the highest possible skill, offering the best conditions of employment, and willing to make bonus payments. To get a permanent labour force to stay, the Board had to be prepared to meet this competition. This they have done by designing a most spacious layout for all the new plant. The conditions of working in the new retort houses are excellent, the waste heat boiler room is tiled from floor to ceiling, the layout of all instrument panels is first-class, the ancillary plant is given ample room, and the exhauster house and waste heat steam turbo-generator house are spacious, light, and self contained. The Board have actually organised 'open days' when the employees can bring their wives and families to see for themselves under what good conditions gas is now manufactured. Good housekeeping is the watchword. This does not mean that a vast sum of money has been spent on a lot of outward show. Although the plant is perfectly orthodox, and no unconventional methods of gas making or ancillary processes are being employed, the plant that has been installed is of the latest design incorporating modern methods of mechanical handling and heat conservation. The installation of pass-out waste heat turbines for electrical generation, running parallel with the grid supplies, is used more as a steam equaliser than as a source of electric power. The steam driven exhausters and boiler pumps get the first call on any waste heat steam, while the balance goes to the turbo-generators.

All steam prime movers pass out steam at 20 lb. per sq. in. which is then used for process work. The turbo-generator will make up the balance of process steam needed and the remainder of the pass-out steam goes to a condenser. This is made possible by the automatic nozzle control fitted to the turbine. Any electricity made in excess of that needed to drive all other prime movers in the production side of the works is exported, first to the compressors and boosters, and finally, if power is still available, back to the electric grid.

The distribution control room, which is manned for

24 hours a day, is a feature of this works and is notable for its simplicity and the avoidance of unnecessary electronic apparatus. Here the ever present problems associated with the import of coke oven gas are constantly under the surveillance of the controller at Litchurch, who often knows the conditions of gas availability at the coking plants before the Coal Board officials on the spot. This is most important in the face of statutory obligations since for those boards taking large volumes of coke oven gas they can be a constant anxiety, but as its supply is by agreement and it is the cheapest gas, it is always the coke oven gas that is dispensed with last in times of low gas demand. Here then is a well laid out modern works where no pains have been spared to enhance working conditions and to manufacture gas in the most up-to-date carbonising plant.

Coal in 1956

WHILE the gas engineer will read the whole of the 1956 report of the National Coal Board with interest and sympathy (using the word as meaning fellow-feeling) he will look first, perhaps, to ascertain the quantity of coal available and likely to be made available in the immediate future. After that he will look for information about the quantity, quality, and prices of carbonising coals; and here he will be more than a little disappointed.

He will be ready to congratulate the Board on being able to say that the industry entered 1957 in better shape than at any time since the war, and he will note that from 1953 to 1956 the annual rate of output of deep-mined coal has remained more or less constant. Total coal output in 1956 was 222 mill. tons, including 12.1 mill. tons of open-cast. But what are the prospects of obtaining 240 mill. tons by 1965? In spite of the disquieting, continuing slight fall in the number of faceworkers, the fact that mechanisation is now beginning to have its effect on output per man shift, and the impressive programme of reconstruction and new mines, provide reasonable ground for cautious optimism. But something like 300 mill. tons of equivalent coal is likely to be wanted for internal consumption by 1965.

We can see nothing in the report to indicate the quantity of carbonising coals made available nor, what is more important, what proportion of these was actually used for this purpose. Mr. Johnson told us in May (I.G.E. 504) that the N.C.B. had estimated that the annual availability of carbonisation coal would increase from 87.5 mill. tons in 1955 to 98.5 mill. in 1965. Coal consumption in 1956 in the carbonising industries was 27.8 mill. for gasworks and 29.4 mill. for coke ovens, a total of 57.2 mill. tons.

It will be remembered that, on the subject of quality, Mr. Johnson's remark that there was evidence that coal now being supplied to the gas industry was mainly satisfactory, met with some criticism, particularly from Mr. Currier and Dr. Burns. The former objected that the use of average figures could hide the fact that a number of gasworks were still called upon to carbonise coals containing 10% to 20% of ash while Dr. Burns noted a continuing increase in the inert content of the very large quantities of coal supplied to his Board. This increase had been noted each year since 1950—there was an increase from 11.5% last year to 11.9% this year—and inert content was still going up.

Nor will the gas industry get much comfort from the section dealing with prices. Mr. Johnson remarked that the coal price policy evolved over the past few years did not appear to have had the effect of inducing consumers to use only those qualities appropriate to their requirements. He might well suggest that some degree of change might be helpful. Certainly there is nothing to suggest either in the table of prices or the accompanying remarks in the report that these prices are likely to have any effect on the direction of carbonising coals to their appropriate industry. On this point we may again refer to the discussion of Mr. Johnson's Institution paper. Mr. Currier observed that it was programming of supplies to the different industries which appeared to have been the Board's means of ensuring that all consumers received a fair share of the available coal. Once again he called attention to the absence of any kind of national fuel policy—unless, indeed, such a policy might be discerned in the wrong direction by the saddling of gas and electric appliances with purchase tax while oil and solid fuel equipment providing the same heat services were free of purchase tax. Finally, one cannot help being faintly amused by the remark in the report, explaining that the table of prices is not evidence that one class of consumers subsidises another. Indeed, the difference of 89s. to the domestic consumer and 88s. to gasworks would not appear likely to have any effect at all in diverting the use of coal to the vastly higher efficiency of gasworks treatment from the waste of the open fire.

But it is probable that the gas engineer will look with greater interest still at the activities of the National Coal Board in carbonisation and the preparation of solid smokeless fuels to meet both industrial and domestic demands. The Board produced 7.2 mill. tons of coke in 1956 in addition to 52,000 mill. cu.ft. of gas. Of the total quantity of town gas supplied by area gas boards in the year, some 8% came from National Coal Board plants. The N.C.B. made over 95% of the country's output of foundry coke but it is clear that it intends to secure and hold a good share of the domestic demand as well—no less than 2½ mill. tons went to other industrial and domestic consumers. One may well ask whether the gas industry is not in some serious danger of losing a substantial proportion of its market in smokeless fuels.

Of the manufactured solid fuels, Phurnacite takes first place; 384,000 tons were available for sale in 1956. It is described as a high quality fuel suitable for closed stoves in general and heat storage cookers in particular, and its manufacture has been consistently profitable since vesting date. But it has also been the Board's policy to get home consumers to take briquettes and ovoids instead of large coal which is scarce. Stoke Orchard is busy with research into the making of new fuels which will burn smokelessly, and, it is to be noted, in the open fire. A new process is being developed—the 'shape' process—to make uncarbonised briquettes without a binder. It may be that determination to reduce air pollution will mean that consumers will be willing to pay more for solid smokeless fuel which will burn well in an open grate, says the report.

There is a good deal of general interest in the rest

of the document, both from the engineering point of view and that of management generally. The technique to be adopted in underground gasification is set out in some detail. It is confirmed that a pilot plant is to be laid down to generate electricity from the gas, which, it is admitted—in something of an understatement—is of relatively low calorific value. Its use is therefore limited unless it can be economically enriched—a curious use of the word—with oxygen.

The detail of mechanisation, though not fully intelligible to the non-mining engineer, makes interesting reading. The drainage of methane from the strata around and between coal seams has become an established practice, it states; 7.4 mill. cu.ft. were extracted in 1956. Some of it is going to town gas supply, notably that from the Haig Colliery in Northern Division and Point of Ayr in the north west. The development of fire-resistant belting for conveyors may be of interest to the gas industry. The idea is not new, but its use has been held up outside the mines by considerations of cost. At the end of 1956, fire resistant belting accounted for over 70% of the total in use underground, says the report. A new type of conveyor (we saw a prototype 25 years ago) is being installed in which the power is transmitted by wire ropes or chains. Because the belt has only to carry the coal, it can be made of lighter and therefore cheaper material. It was originally suggested that such a design might be useful in very long conveyors where the power transmitted might be unusually great. In the mines, as there are no driving drums for the belt, the fire risk is considerably reduced.

The final chapters of the report on manpower, training, and education and organisation generally, will also not be without interest to those responsible for the management of other industries, both national and private, and of comparable dimensions and complexity.

N.W. Tables Turned

WITHOUT raising the price of gas, indeed entirely by improved efficiency and dramatically stepped-up productivity, the North Western Gas Board has converted an estimated loss of £1 mill. into a profit of about £¾ mill. for its eighth year of working notwithstanding a drop of about 2% in gas sales, Mr. D. P. Welman, Chairman of the Board, disclosed in Manchester yesterday. It is opportune to recall that in June last year Mr. Welman announced that in spite of increases in the cost of coal, freight, wages and salaries, totalling over £2 mill. a year, the North Western Gas Board was determined to hold gas prices unchanged until at least March 31, 1957, although to do so meant facing the possibility of a deficit of nearly £1 mill. on the year's trading. The Board, he then said, was determined to swallow the whole of the anticipated deficit by still closer control on operational efficiency and still further increases in productivity, although this would not be easy when productivity per employee had already increased over the previous three years by 12%. 'When I made this declaration of policy,' Mr. Welman stated yesterday, 'gas prices in the north west had remained frozen for a year. It is now two years since any increase in the North Western Gas Board's gas prices took place.' (In the middle of last year all gas boards except the North Western and one other area board announced increases in the prices of gas.)

Mr. Welman disclosed that in the past year the Board's productivity, measured by average sales of gas per employee, has increased by 6½%—more than half the increase achieved in the previous three years. 'Every one of the Board's ten operating groups,' he said, 'and every single department within these groups—both operational and administrative—contributed to the dramatic upturn in productivity.' The swing-over of some £1¼ mill. represented nearly 8% of total annual operating costs (*i.e.*,—all expenditure except outlays on coal, oil, and stock-in-trade for resale.)

Gas on T.V. Tonight

LEST it be thought that the gas industry's news value pales alongside that of other, newer, industries, we hasten to indicate the B.B.C. television feature 'Behind the Headlines' which tonight reveals something of the new developments taking place in gas manufacture.

The programme is devoted to Britain's gas industry and is keyed to the opening of the new works extension at Litchurch, Derby, the hub of the East Midlands gas grid. It deals mainly with the growth of gas grids, the closing of small, uneconomic works, the use of 'tail' gas, methane from the coal mines, and an interview with Sir Harold Smith, Chairman of the Gas Council, on the present and future activities of the gas industry. Material scheduled for transmission includes specially filmed items on Litchurch gasworks, small gasworks at Mildenhall, Suffolk, mainlaying in Fawley refinery to take 'tail' gases, and the extraction of methane from Point of Ayr colliery.

The interview with Sir Harold Smith will be at Watson House Research Station, and the programme will include extracts from the Gas Council film 'Natural Gas' and the fibreglass film 'Pipeline for Wales.' The programme may be viewed immediately after the 7.15 p.m. News in all B.B.C. television areas, and is scheduled to run for about ten minutes.

Paris, Here We Come!

MARK TWAIN, we seem to remember, entertained us in our youth with his 'Innocents Abroad'; and Jerome K. Jerome, with 'Three Men in a Boat—To Say Nothing of the Dog.' Pity they are no longer with us: They might have collaborated in a joint sequel entitled 'Fifty-two British Gas Women in Paris—To Say Nothing of their 26 Friends.'

One Sunday afternoon in May—and let's not lose sight of the traditional adjective associated with the month: *Merry*—52 members of the Wolverhampton branch of the Women's Gas Federation and 26 friends turned their backs on their home town and made tracks for Paris.

Just over 24 hours later, having briefly shown the flag along the French north coast, they had invaded and 'taken over' the Paris hotel which had been 'strained to capacity' to hold them all. Flushed with this early victory, they never looked back: Luncheon at Versailles with sprays of lily-of-the-valley all round; visits to Night Clubs; abandon in a lift with the machine shooting up and down out of control; orders to Paris taxi drivers to proceed in line astern along the Boulevards. . . . 'Ask what happened to the New Zealand traveller's towel,' invites 'G. A. W.,' who wrote to tell us of all this. Perhaps it would be more judicious not to!

A week later they all arrived back in Wolverhampton, feeling, we gather from 'G. A. W.,' tired, happy, and satisfied.

Attagirl!

Personal

MR. F. L. HARRISON has been appointed Manager of the East Midlands Gas Board's Grantham works. MR. R. L. CARTER has been appointed District Distribution Engineer for the Board's Long Eaton and Ilkeston District. MR. H. L. CLARKE has retired after 43 years' service with the gas industry; he was chief draughtsman for the Board's Nottinghamshire and Derbyshire Division.

SIR HAROLD and LADY SMITH, of Cowslade Farm, Hartley Wintney, Hants., celebrated their ruby wedding anniversary last Thursday. They have two daughters, Patricia and Diana, both of whom are married to farmers. Sir Harold, who since 1952 has been Chairman of the Gas Council, recently celebrated 50 years' service in the gas industry.

MR. J. O. ROBERTS has been appointed Manager of the Trimdon Grange (Co. Durham) coke-oven plant, owned by the National Coal Board. Mr. Roberts entered the industry as an assistant chemist with the Consett Iron Co., Ltd.

Obituary

MR. PATRICK J. ROONEY has died aged 82. He was for many years manager of Strabane (Co. Tyrone) Urban Council's gas undertaking.

For Services Rendered

ALL our readers will wish to extend congratulations to the the following whose services to the gas industry were rewarded in the Birthday Honours List:—

C.B.E.

MR. SYDNEY SMITH, Chairman, Scottish Gas Board.

O.B.E.

MR. JOHN H. DYDE, Deputy Chairman, Eastern Gas Board.

M.B.E.

MR. SIDNEY BLACK, Coal and Products Officer, Northern Gas Board.

MR. WILFRED B. CLARIDGE, Engineer and Manager, Swindon Division, South Western Gas Board.

B.E.M.

MR. JOHN T. BAILEY, Gas Fitter, Barnsley, E.M.G.B.

MR. CHARLES W. B. DEACON, Works Foreman, Boston, E.M.G.B.

MR. GEORGE C. DIX, Works Superintendent, Pembroke, W.G.B.

MR. RICHARD DIXON, Appliance Maintenance Man, Blackburn Group, N.W.G.B.

MR. WILLIAM J. FISHLEY, General Consumer Service Inspector, Plymouth/Cornwall Division, S.W.G.B.

MR. SIDNEY HILLS, Foreman Service Layer, Kent Suburban District, S.E.G.B.

MR. ERNEST WINDSOR, Meter Shop Foreman, Coventry District, W.M.G.B.

Members of the gas industry will also wish to congratulate MR. JAMES BOWMAN, C.B.E., Chairman of the National Coal Board, on the Knighthood bestowed on him, and MR. KEITH L. STOCK, Under-Secretary, Ministry of Power, on his award of **C.B.**

Diary

June 20.—NORTHERN JUNIORS A.G.M.: Tynemouth, 2.30 p.m.

June 20.—MIDLAND JUNIORS: Ladies' Day.

June 22. — WESTERN JUNIORS: Ilfracombe. Summer Meeting and Ladies' Day.

June 22.—WALES AND MONMOUTHSHIRE JUNIORS, NORTH WALES SECTION: Holyhead. Ladies' Day.

June 25.—LONDON AND COUNTIES COKE CIRCLE. Visit to Watson House Centre.

June 26.—THE INSTITUTION OF GAS ENGINEERS, SOUTH WESTERN SECTION: Summer Meeting and Ladies' Day.

June 28.—WALES GAS CONSULTATIVE COUNCIL: Council Chamber, Town Hall, Llandudno, 11 a.m.

June 29.—WESTERN JUNIORS: Imperial Hotel, Ilfracombe. 12.30 p.m. Summer Meeting and Ladies' Day.

July 2.—SOUTH EASTERN G.C.C.: Caxton Hall, Westminster, 2.15 p.m.

Keith Blackman Ltd.

The offices of the Blackman Export Co. Ltd., a subsidiary of Keith Blackman Ltd., have been moved from 23, Queen Square, London, W.C.1, to the parent company's head office at Mill Mead Road, London, N.17. At the same time Keith Blackman Ltd. opened a London area sales office at the Queen Square address vacated by the Blackman Export Co., Ltd.

Lancs and Yorks Juniors Visit Lancashire Tar Distillers

LANCASHIRE and Yorkshire Juniors recently paid a joint visit to the Cadishead works of Lancashire Tar Distillers, Ltd., where they were received by Mr. F. R. Fergusson, General Works Manager, and Mr. W. Horrocks, Manager, and were formally welcomed by Mr. J. B. Lane, Technical Managing Director.

The Yorkshire contingent numbered 21, headed by Mr. R. E. White, Junior Vice-President and a Member of the Council. Lancashire Juniors had with them Mr. T. Nicklin, President; Mr. J. K. Lord, Senior Vice-President; Mr. John Grayston, Member of the Council; and Mr. T. W. Pickthall, Secretary.

Mr. White proposed a vote of thanks to the Company, which was seconded by Mr. Nicklin. This was the Lancashire Association's second visit to the works.

Since their last visit ten years ago, crude tar production has increased tenfold and new naphthalene plant has been installed. The benzole plant was burned out last year. Development has cost the Company more than £500,000 since 1953 and £750,000 since 1950; more is anticipated. It is the aim of the Company to make Cadishead the foremost tar distillery in the country.

Extensions at Cadishead were started toward the end of 1948 with the installation of a modern continuous tar distillation plant of 75,000 tons annual capacity, this plant going on stream in September, 1950. Pitch beds were laid out with an area of 7,000 sq. yards, and a storage capacity of 35,000 tons.

The necessary storage tanks for crude tar and distillates were installed concurrently with the primary plant, together with a blending plant for the preparation of crude tars and coal tar fuels. A further continuous tar distillation plant, with an annual capacity of 75,000 tons of tar, was installed in the spring of 1954 with a furnace of different design.

The main operations at Cadishead are the primary distillation of crude tar into close boiling fractions and pitch; extraction of crude tar acids—phenol and its homologues—from selected fractions; recovery of naphthalene from one fraction after tar acid removal; recovery of benzene, xylene, and solvents from the lower boiling fractions, and blending of oils to sales specification and the preparation of road tars and coal tar fuels.

The benzole and naphtha plants were planned to handle, in addition to the light distillate from the primary plant, low boiling oils from other of the Company's works, and some 4 mill. gal. of gasworks' crude benzole under the National Benzole Company's scheme. Last year's fire wiped out the major portion of the production plant, however, only four batch still now being available with ancillary plant, to fine the naphthas from the Manchester area works. On this site also was the plant for the preparation of pure coal tar bases—pyridine and its homologues. Plans are in hand for the installation of plant to replace the lost capacity.

The continuous naphthalene plant was installed in the spring of 1956 and is capable of producing ten tons per day of phthalic grade naphthalene of 78°C. crystallising-point. Modifications are in hand to increase this capacity.

The old batch tar stills which ceased operation in 1950 are being demolished, and a modern oil distillation plant, capable of distilling up to 35,000 gal. per day, is to be erected on the site.

Developments are also in hand to increase the steam-raising capacity of the boiler to meet expected developments.

New Dumfries Plant will Cut Annual Coal Consumption by 4,000 tons

Sc.G.B. CHAIRMAN PRESIDES AT OFFICIAL INAUGURATION

EQUIPPED with the most up-to-date coal carbonising plant available, the Dumfries works of the Scottish Gas Board is expected to save 4,000 tons of coal a year, producing the same amount of gas as in the past, and to make available substantially more coke and breeze.

As mentioned briefly in our special article on new plant in Scotland last week, the new retort house at Dumfries was formally inaugurated by Mr. G. J. McDowall, Provost of Dumfries, at a ceremony on June 7 at which Mr. Sydney Smith, Chairman of the Scottish Gas Board, presided.

Other Board Members present included Lord Mathers, Mr. D. D. Melvin, and Dr. J. W. McDavid; while among Board officials were Mr. D. Beavis, General Manager, Edinburgh and South-East Division; Mr. G. J. B. Cox, Deputy General Manager, Edinburgh and South-East Division; Mr. T. S. Ricketts, Chief Engineer; Mr. R. H. Bone, Commercial Manager; Mr. C. B. S. Mitchell, Management Officer; Mr. A. T. Herd, Secretary; Mr. S. C. Johnstone, Sub-Group Manager, Dumfries; and Mr. R. Fife, formerly Group Manager at Kilmarnock, who has now retired, but who was in charge at Dumfries when the work on the retort house was initiated.

Contractors Represented

Representing West's Gas Improvement Co., Ltd., who carried out the installation, were Mr. Ernest West, Mr. John West, Mr. C. A. Poulson, and Mr. J. Stewart.

At the subsequent luncheon in the Station Hotel, Dumfries, the toast, 'The Town and Trade of Dumfries,' was proposed by Mr. West, the reply being given by Provost McDowall. Ex-Provost T. Bell, Dumfries, Chairman of the South-West District Committee of the Scottish Gas Consultative Council, proposed 'The Scottish Gas Board.'

Replying, Mr. Sydney Smith said that the horizontal retorts at Dumfries had outgrown their usefulness and were wasteful by modern standards. The new installation meant that Dumfries was now equipped with the most modern type of gas manufacturing plant. As compared with previous operational results, annual coal requirements for manufacturing the same quantity of gas would be reduced by nearly 3,000 tons, while coke and breeze available for sale would be substantially increased. Because of the installation of waste heat boilers, there would be a further annual saving of over 1,000 tons of coal formerly used as boiler fuel.

The view had been expressed in Dumfries during the past few days that the sooner gas was cleared out of the town the better. This view was unrealistic. The gas industry had never been more virile and progressive than to-day.

Courageous Planning Needed

After referring to unfair competition which the gas industry faced in Scotland, Mr. Smith said that only courageous, adventurous, and realistic planning of the country's resources would bring a measure of settled prosperity. Nuclear energy was not going to cure all power problems in a few years. They would still be very largely dependent on oil, and a third of their total additional requirements must come from coal.

The gas industry made by far the most efficient use of coal, and the more gas was used for domestic, commercial, and industrial purposes the greater would be the value obtained from coal resources. Muddled thinking about the proper rôles of gas and electricity could have tragic consequences.

Mr. Smith concluded with the observation that in providing the new highly-efficient gas-making unit at Dumfries, the Scottish Gas Board had invested precious capital for the future benefit of the citizens. He felt sure that the Town and County Councils of Dumfries would see to it that their desire and intention to provide an efficient and lasting service would not go unheeded.

The Chairman Was 'Subdued'

MONG the guests at the luncheon in Dumfries to celebrate the opening of the new retort house last week, was Mr. J. S. Pickles, Chairman of the South of Scotland Electricity Board.

His presence, said Mr. Sydney Smith, Scottish Gas Board Chairman, imposed on him an obligation to be 'most temperate' in his observations on the operations of the electricity boards and had a 'somewhat subduing influence' on his remarks.

But he felt that his presence might indicate his acceptance of the fact that both gas and electricity could play their rightful parts in the life of the community.

Provost G. J. McDowall, of Dumfries, is seen unveiling the plaque on the new retort house. With him, left to right, are Mr. D. D. Melvin, Member of the Scottish Gas Board; Mr. A. T. Herd, Secretary; Lord Mathers and Dr. J. W. McDavid, Members of the Scottish Gas Board; Lieut.-Col. J. G. Crabbe, Lord Lieutenant of Dumfries and County Convener; Mr. Sydney Smith, Chairman, Scottish Gas Board; Ex-Provost T. Bell, Chairman, South-Western District Committee, Scottish Consultative Council; and Baillie J. E. Sterling, Burgh Housing Convener, Dumfries.

EAST OF SCOTLAND JUNIORS HOLD GOLF OUTING

THE golf outing of the East of Scotland Junior Gas Association took place over the King James VI golf course, Perth, on June 1.

Results were:—Members—First Prize and President's Putter, J. T. Christie, Dundee, 69 nett; Second Prize, J. C. MacDonald, Perth, 70 nett. Visitors—First Prize, C. H. Murray, Dunfermline, 77 nett; Best Scratch Score Prize, J. MacNaughton, Perth, 76 nett. Consolation Prize, J. Watson, Dundee.

Mr. C. Balfour, Edinburgh, and Mr. J. Kinnon, Dunfermline, officiated at the prize-giving.

The camera catches a section of the party during the visit to Coryton refinery.

LONDON AND SOUTHERN SECTION VISIT MOBIL OIL REFINERY

FOR their summer meeting, the London and Southern Section of the I.G.E. visited the Mobil Oil Company's Coryton refinery, 25 miles from London on the north bank of the Thames Estuary, where they were welcomed by Mr. J. W. Bartholomew, Assistant Manager.

After an introductory talk, they were taken—owing to the vast area to be covered, in buses—first to see the jetties which now accommodate tankers of up to 38,000 tons but are capable of enlargement to take super-tankers of up to 80,000 tons. There is sufficient water for unloading to be carried out at all states of the tide, and the length of ship to shore hose is varied automatically according to the depth of water.

To avoid abrasion of the pumps and corrosion of plant, water from the estuary, which is used in large quantities for cooling purposes, is passed through a fine filter to remove sand, and is then chlorinated to eliminate marine life—mussels are the worst offenders. The pumps are situated near the jetties, and the purified water is discharged on the opposite side of the spit of land on which the refinery is built.

The visitors next saw the automatic thermo-reforming plant in which high grade petrol is produced by thermal cracking with the heat of combustion of otherwise useless products formed in the process. One man, continually on duty in the control room, can control the process manually, but it is normally subject to automatic control by temperature, pressure, and flow measuring devices.

Also inspected was the refinery power station which, fired by petroleum products and generating sufficient power for the needs of a town of 100,000 inhabitants, makes the refinery independent of the grid.

Crude oil from Kuwait is processed almost exclusively in the refinery which is mainly concerned with the production of lubricants, and much of its output goes by sea to the large lubricant blending plants at Wandsworth and Birkenhead.

After the tour, the visitors proceeded to Southend where they were entertained to luncheon at the Palace Hotel by the North Thames Gas Board.

They were welcomed by the Mayor, Councillor F. Wood, who recalled the recent centenary of the founding of the Southend Gas Company and said he hoped the new high-pressure main from Beckton might make possible the removal of the gasworks from the middle of the promenade.

Mr. Dougill, Chairman, replied on behalf of the visitors, and thanked them for their support during his year of office.

S.W.G.C.C. Meeting

Charges payable by incoming and outgoing consumers was the main topic discussed at a recent meeting of the South Western Gas Consultative Council in Plymouth under the Chairmanship of Sir Colin Campbell.

N.T.G.C.C. Meeting

A meeting of he North Thames Gas Consultative Council was held on May 29 with Councillor Edwin Bayliss in the Chair.

Whatever the Reason, the Weather was 'Set Fair' as Usual

LONDON JUNIORS VISIT BRIGHTON

THE admirable weather which traditionally attends the Summer Meeting and Ladies' Day of the London and Southern Junior Gas Association is variously attributed to good luck, a reward for virtue, and efficient organisation by the Committee, depending on the sympathies and beliefs of those concerned. Whatever the cause the fact remains that anyone planning a day by the sea would be well advised to let the date coincide with the London Juniors' outing. Such a wily planner might this year have met his benefactors face to face for it was to the Regency façade and vigorous delights of Brighton that the Association journeyed on June 15.

Conscientious as always, members spent the morning inspecting the Portslade works—which is as near as one is likely to get to combining a works visit with a sojourn at the seaside—and later joined their ladies, complete with shopping, at the Grand Hotel, Brighton, for lunch.

Proposing the omnibus toast of the Association, the guests, and the President, Mr. W. K. Hutchison, Chairman of the South Eastern Gas Board, referred to the fact that the setting for this meeting made a pleasant change to the 'somewhat medical and theatrical atmosphere' in which they were accustomed to hold their meetings.

In the course of his reply, the President, Mr. J. B. McKean, described the meeting as 'a means by which the ladies might be recompensed for the loss of their husbands during Association meetings held throughout the year.' He expressed his appreciation to the South Eastern Gas Board and to Mr. C. R. M. Croft, General Manager, Sussex Division, and his staff. Finally he thanked Mr. J. H. Shadbolt, the Station Engineer, whom he complimented on a fine carbonising plant.

During the afternoon, members visited Perham Park, where the splendid Elizabethan mansion and handsome grounds provided much of interest.

Litchurch Gas Works Sidings—carried out for the East Midlands Gas Board under the direction of A. W. Elliott, Esq., M.Inst.F.—were constructed by Grant, Lyon & Co., Ltd., in five months and comprise three miles of standard gauge track, using 95lb. R.B.S. Bullhead material, and 21 turnouts. The layout consists of eight parallel tracks with one loop road and connects with the works across the old Derby Canal.

Grant, Lyon & Co., Ltd., have a special division dealing solely with railway sidings construction and maintenance, with technical drawing office facilities backed up by fully skilled platelaying gangs supervised by men trained to British Railways standard.

Other activities cover reinforced concrete construction and foundation work, earth moving, heavy drainage and marine works.

Your enquiries for any of the foregoing are invited.

Grant Lyon
AND COMPANY LIMITED
SCUNTHORPE

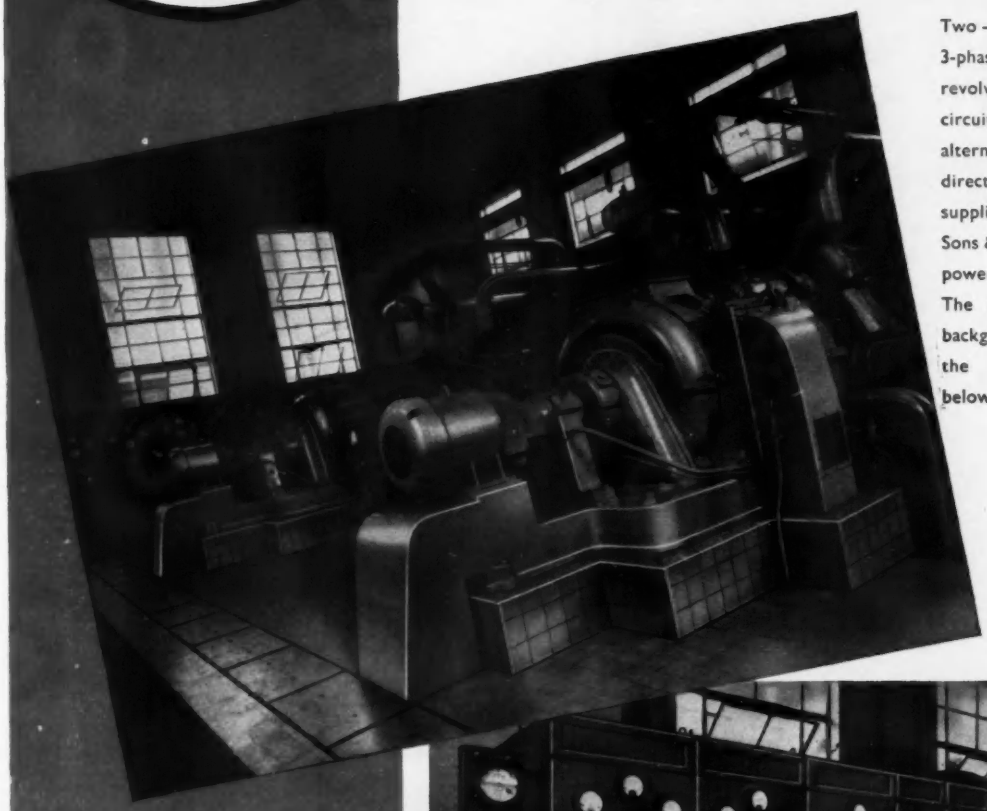
Railway and Civil Engineering Contractors. Head Office: Scotter Road, Scunthorpe, Lincs.

Phones: Scunthorpe 2308 9; Manchester Irlam 2837; Swansea 52519

E C C

AT LITCHURCH WORKS

DERBY SUB-DIVISION — EAST MIDLANDS GAS BOARD



Two — 1250 kVA 415 volt 3-phase 50 cycle 1000 r.p.m. revolving field, closed-air-circuit salient pole type alternators complete with direct-coupled exciters supplied to W. H. Allen Sons & Co. Ltd., to provide power at Litchurch Works. The switchboard in the background is shown in the second illustration below.

The main low tension Distribution Switchboard controlling the two alternators, a 1000 kW grid supply feeder, 200 kW rectifier feeders, and various 600 amp. outgoing feeders.

THE ELECTRIC CONSTRUCTION COMPANY LTD.

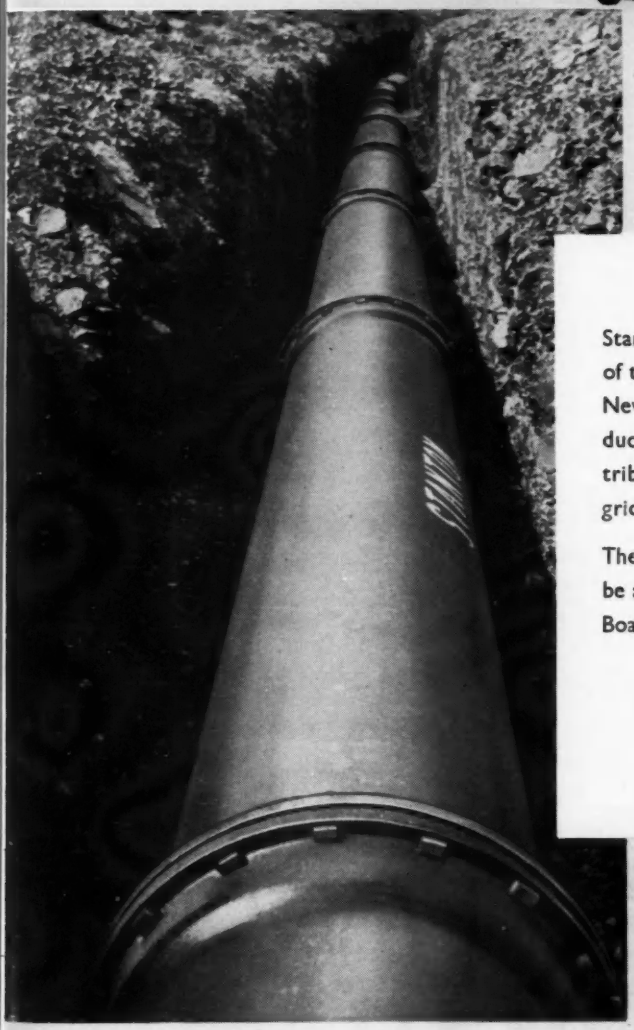
BUSHBURY ENGINEERING WORKS · WOLVERHAMPTON

3153

STANTON

SPUN IRON PIPES AND FLEXIBLE JOINTS

for Gas at High or Low Pressures

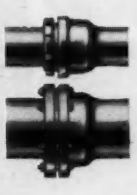


Stanton supplied cast iron mains for the greater part of the 550 miles grid distribution system of which the New Litchurch Gas Works is one of the main gas producing units. The Company's Coke Oven Plant contributes 1,000,000 cubic feet of gas per hour to the grid system.

The Stanton Ironworks Company Limited is proud to be associated with another important East Midland Gas Board Scheme.

MAIN PRODUCTS

- PIG IRON
  - FOUNDRY
  - REFINED
- CAST IRON
  - PIPES AND SPECIAL CASTINGS
  - GENERAL CASTINGS
  - TUNNEL SEGMENTS
- SLAG
  - TREATED: DRY
  - HOT AND COLD ASPHALT
- COKE OVEN BY-PRODUCTS
- BRICKS
- CONCRETE
  - PIPES
  - LIGHTING COLUMNS
  - PAVING FLAGS
  - GENERAL PURPOSE SHEDS
- PRESTRESSED CONCRETE
  - PRESSURE PIPES
  - LIGHTING COLUMNS



All Stanton Spun Iron Pipes are individually works tested to an internal hydraulic pressure of 500 lb. per sq. inch.

Stanton Screwed-Gland Flexible Joint: up to 10" diameter inclusive. Stanton Bolted-Gland Flexible Joint: 4" diameter and above.

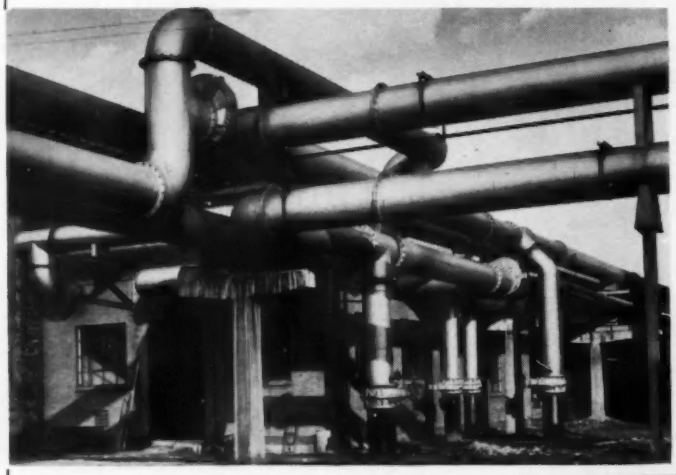
THE STANTON IRONWORKS COMPANY LIMITED NEAR NOTTINGHAM

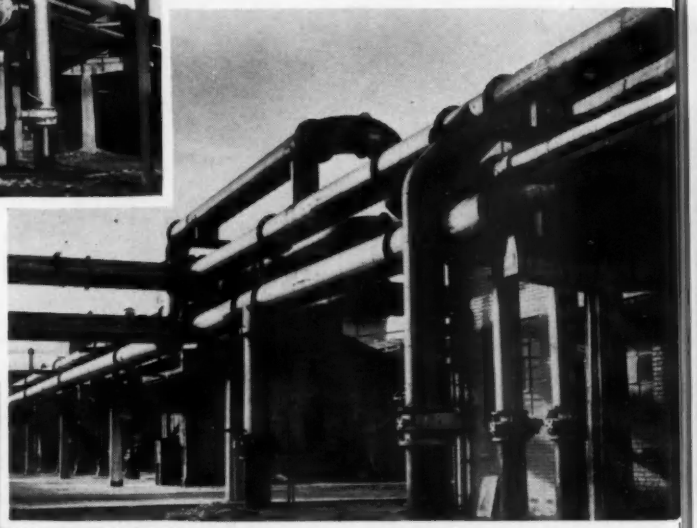
PIPES

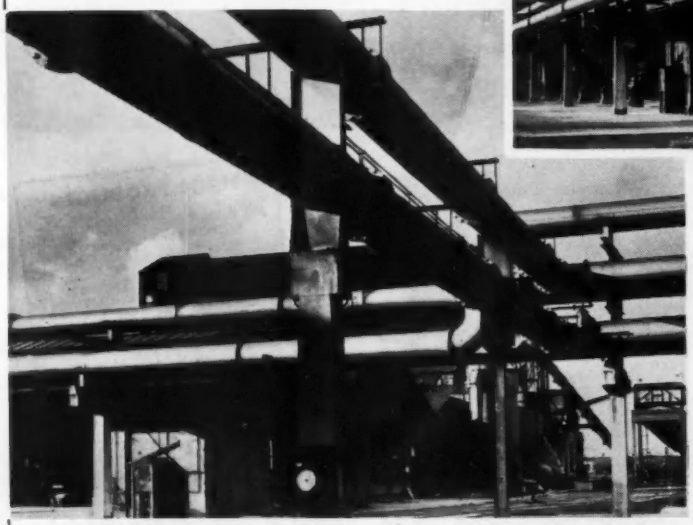
BY

CLAYTON SON & CO. LTD.

HUNSLET, LEEDS.





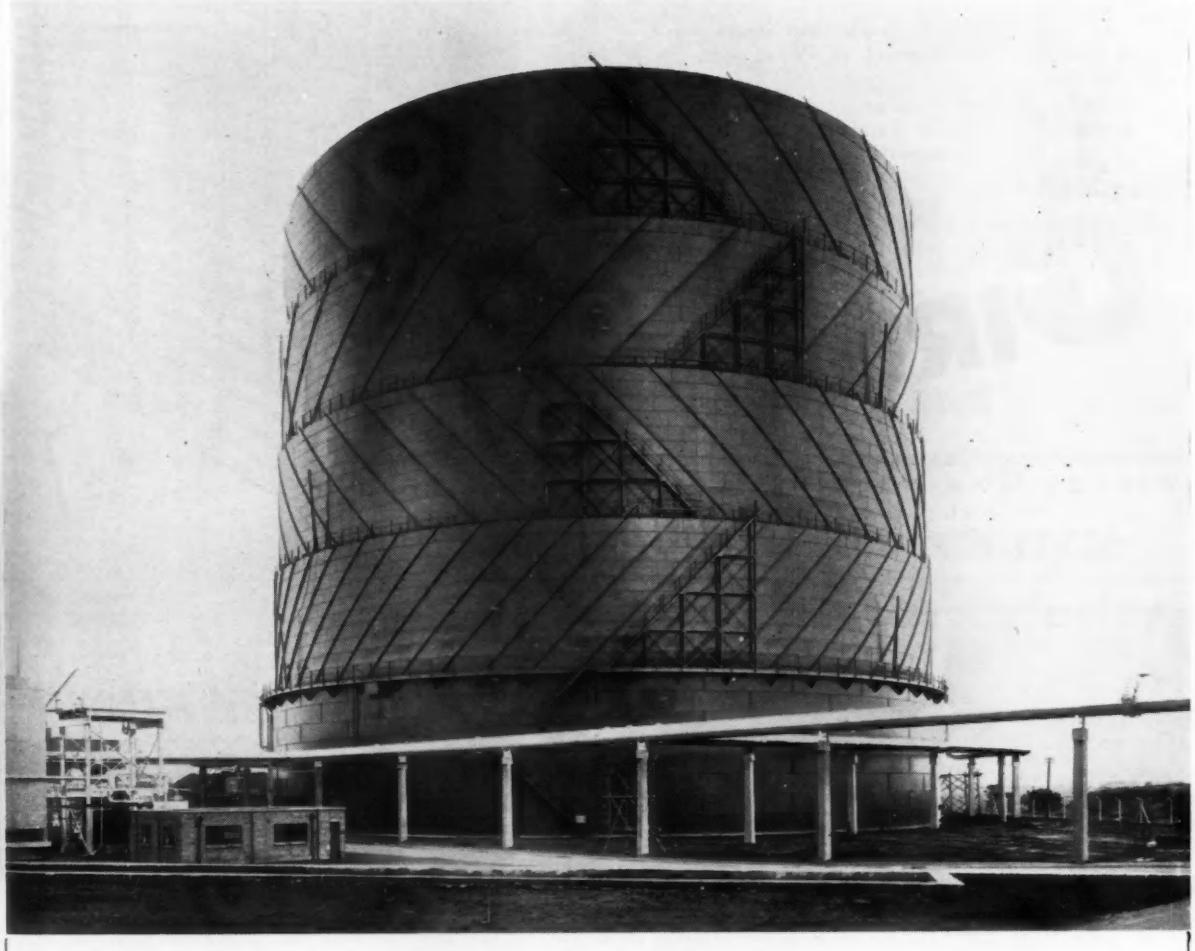


LITCHURCH GAS WORKS

DERBY

SIX MILLION

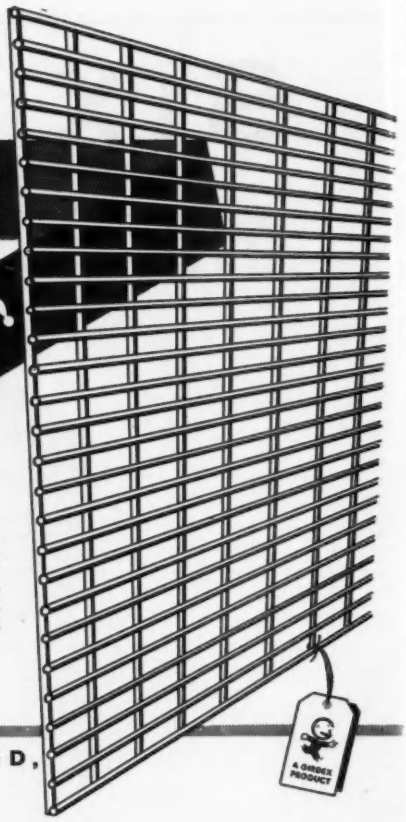
CUBIC FEET CAPACITY



LITCHURCH GAS WORKS
DERBY

CLAYTON SON & CO. LTD.
HUNSLET LEEDS YORKSHIRE

It's a perfect screen!



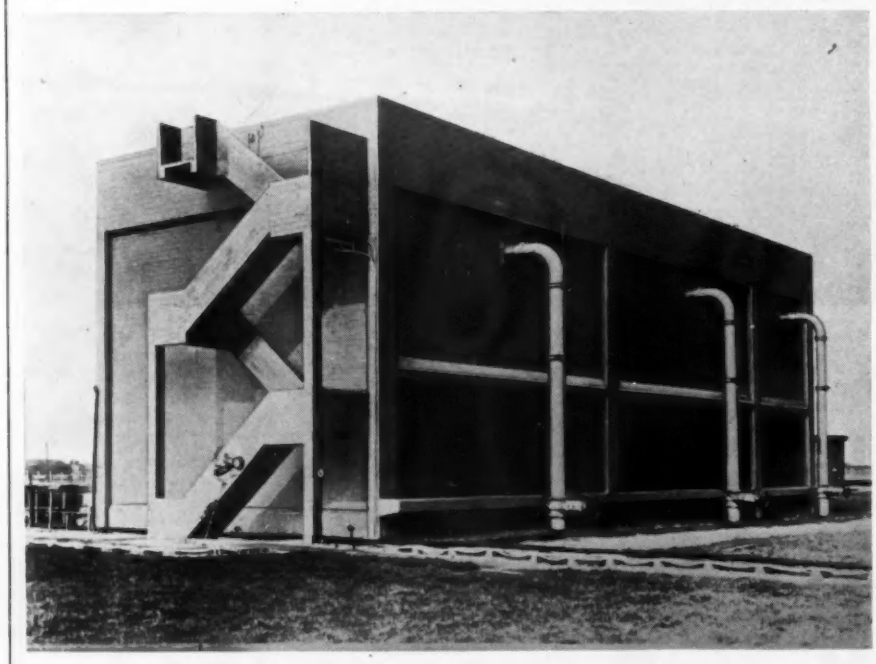
. . . perfect for the grading and screening of coal, coke, stone, gravel, granite or sand.

Where unvarying dimension of aperture is important, where long-term resistance to abrasion is a "must", Weld-fabric is essential. Constructed of high-specification steel, rigid and durable, this mesh is virtually indestructible, whatever the material to be handled.

GIRDEX

For screens, graders, guards, partitions, storage racks, switchgear enclosures, Weld-fabric makes light of heavy duty; year after year after year.

GIRDEX ENGINEERING COMPANY LIMITED,
WESTON LANE, TYSELEY, BIRMINGHAM, 11
Tel: ACOcks Green 2205 *Grams:* Girdexpres

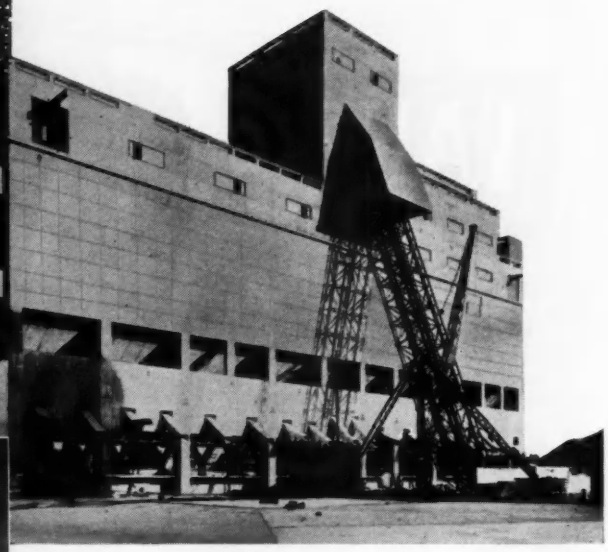


WATER COOLING BY MODERN METHODS

Four towers of the type illustrated have been constructed at the new gas producing plant at Morwell, Australia, described in the May 22 issue of Gas Journal.

They are believed to be the only British units incorporated in the scheme and were designed and supplied by

THE DAVENPORT ENGINEERING CO., LIMITED, BRADFORD



Designers and Constructors in Reinforced concrete for the Gas Industry

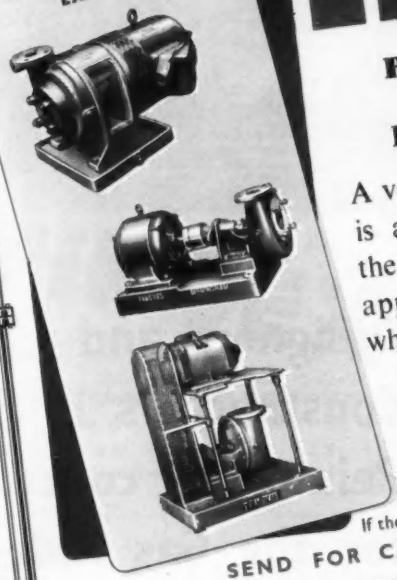
7 LYGON PLACE · WESTMINSTER · S.W.1

Photographs by permission of North West and North Thames Gas Boards

TANGYE AR

RANGE of PUMPS

EXAMPLES



A variety of designs is available to suit the many pumping applications with which Engineers in gas-works have to deal.

If they are not already on your files
SEND FOR CATALOGUES TODAY

TANGYES LIMITED
PUMPS DIVISION
SMETHWICK BIRMINGHAM
'Phone: SME 1181

CONSULT YOUR NEAREST AREA OFFICE

LONDON W.1. 60 Grosvenor Street 'Phone: MAY 1337
MANCHESTER 5 Cross Street 'Phone BLA 5320
NEWCASTLE 21 Kings Road Whitley Bay 26363
GLASGOW 12 Waterloo Street 'Phone: CEN 6368

From the variety of pump designs offered by Tangyes Limited, the A. R. range has a wide appeal. This group with electric motor drive is reproduced by permission of the West Midlands Gas Board and is taken at Swan Village Gas Works. They are used for mixing a variety of Gas Works liquors.

AD. No. 41

We can offer A, B. or C pattern locker installations for either aisle or wall locations. The A and B types are available in single or double tiers, and all patterns will take plenum, steam, hot water, or electric strip heating.

LOCKERING *at Litchurch*

The equipment illustrated is our "B" pattern and was installed at the Litchurch Gas Works by our Clothes Lockering Division.

To comply with the latest welfare requirements, Gas Works Officials throughout the country are calling upon our services to provide for their employees.

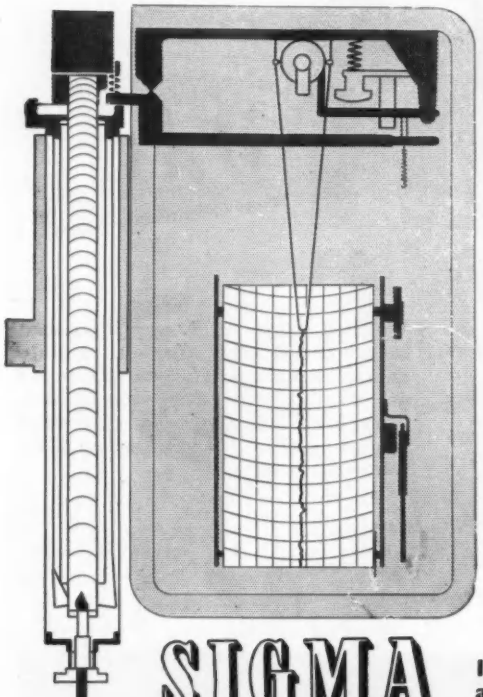
More than 20 years experience is at your disposal when Speedwell engineers serve you, and we will be glad to give you full details of our capabilities.

Speedwell

Gear Case Co. Ltd.

TAME ROAD, WITTON, BIRMINGHAM 6.

Tel: EAST 2261. 'Grams: SPEEDWELL, BIRMINGHAM.



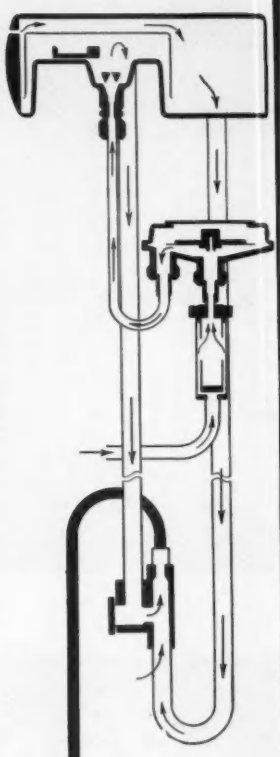
Why you should install the

SIGMA

Recording

Calorimeter

MARK II



Incorporating all the improvements of modern instrument technique and recent scientific development, this SIGMA calorimeter will give a highly accurate reading of the calorific value of any combustible gas. It is not affected by normal changes in temperature and barometric pressures and gives a rapid response to change in C.V.

Extras supplied if required :—Automatic Control of C.V., Telemetering, Warning Lights, etc., etc. If you are interested in reliability, minimum maintenance, low cost—ask for full information NOW!

SIGMA
INSTRUMENT CO. LIMITED

Instrument Makers for the Gas and Allied Industries 1920 to 1957

SPRING ROAD · LETCHWORTH · HERTFORDSHIRE

Telephone : Letchworth 1845 (3 lines) *Telegrams : SIGMA Letchworth*

"RG" TUBE CUTTING AND SCREWING MACHINES

Tested by Watson House, and used by Gas Boards

FOR TUBES from ½"—2" diam.— "RG 2"
½"—4" diam.— "RG 4"

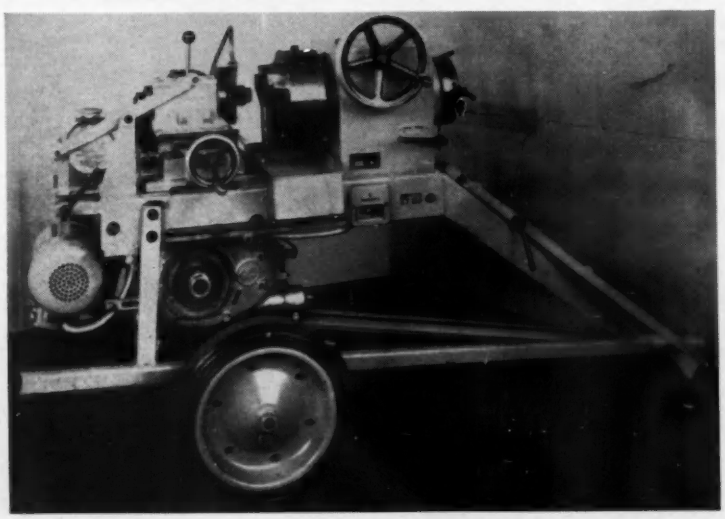
PORTABLE OR BENCH MODELS

ELECTRIC, PETROL, PNEUMATIC and DUAL (Petrol/Electric) DRIVE

For B.S.P., CONDUIT, AMERICAN (API), WHITWORTH & UNIFIED SCREW THREADS

PRODUCES NIPPLES FROM SCRAP

BEVELS TUBE FOR WELDING



DUAL DRIVE (PETROL/ELECTRIC) TROLLEY MODEL

THE "RG" MACHINE PRODUCES THREADS BY MEANS OF THE MILLING PRINCIPLE—NO DIES REQUIRED. A CIRCULAR SAW FITTED TO THE CUTTING SPINDLE ENABLES TUBING TO BE SAWN, FREE OF BURR, TO ANY REQUIRED LENGTH WITHOUT REMOVAL FROM THE MACHINE. THE "RG" IS STURDILY BUILT & DESIGNED TO BE OPERATED BY UNSKILLED LABOUR. IT REQUIRES THE MINIMUM OF MAINTENANCE

ALSO—PIPE BENDING MACHINES and "ROLL-RULER" the practical instruments for exact drawings

J. C. NEVILLE LTD.

34 PRIEST'S BRIDGE, LONDON, S.W.14 Tel.: PROSPECT 8796

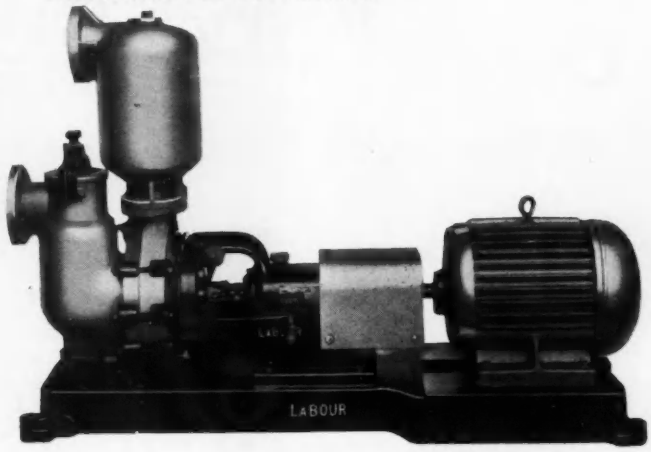
DEGREES BE

10° 18° 25° 32° 41° 45·6° 55° 61° 65°

·00150 ·00145 ·00140 ·00135 ·00130 ·00125 ·00120 ·00115 ·00110 ·00105 ·00100 ·00095 ·00090 ·00085 ·00080 ·00075 ·00070 ·00065 ·00060 ·00055 ·00050 ·00045 ·00040 ·00035 ·00030 ·00025 ·00020 ·00015 ·00010 ·00005

INCHES PENETRATION PER MONTH

LABour Pumps for Chemical and allied industries have been designed specifically for such purposes, and are made from alloys especially developed to provide the highest resistance to corrosion.



BRONZE (88% CU–10% SN–2% PB)
CAST IRON
K 26
LEAD
MONEL
R–55

LOSSES BELOW THIS LINE ARE CLASSED "FULLY RESISTANT"

0 10 20 30 40 50 60 70 80 90 100

% H_2SO_4

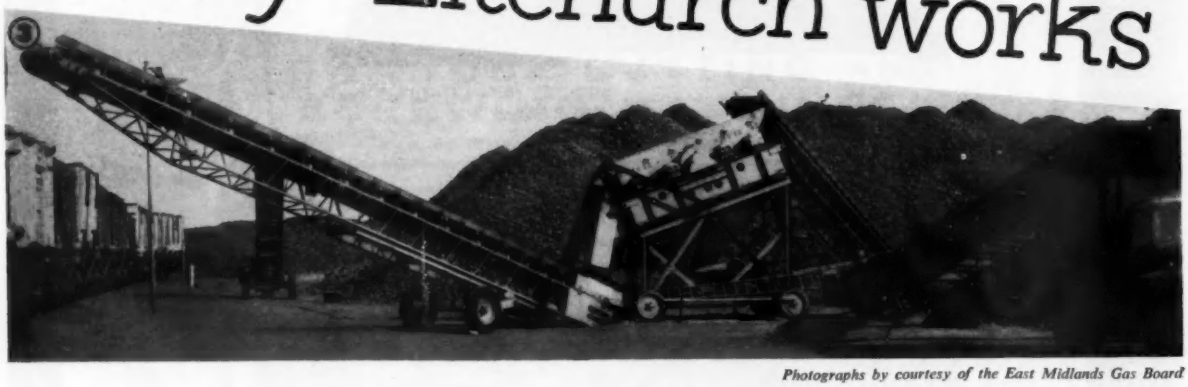
LABOUR PUMPS

BRITISH LABOUR PUMP CO LTD. BLUNDELL ST LONDON N7 Tel: North 6601-4

15 Johnson machines

speed coke-handling at

Derby-Litchurch works



Photographs by courtesy of the East Midlands Gas Board

The equipment consists of four Loband Loaders, six 48′ 0″ centres Horizontal Hylo-veyors, four 48′ 0″ centres Hylo-veyor Stackers, and one Portable three-deck Screen.

All the conveyors are fitted with 24″ belts to give a handling rate of 100 tons per hour in coke.

The machines are electrically driven, and provided with metal-clad plugs and sockets for coupling in series when used as a train. Power is picked up from a series of points on a ring main.

Stock piling can be carried out simultaneously at four points, using the four pilers and four Loband Loaders.

Recovering can also be from four points simultaneously or, by using the full train, recovery can be from any point on the stocking ground to rail wagons.

Photograph (1) illustrates a 48′ 0″ Hylo-veyor Piler and Loband Loader stockpiling to 20′ 0″ direct from end-tipping lorry.

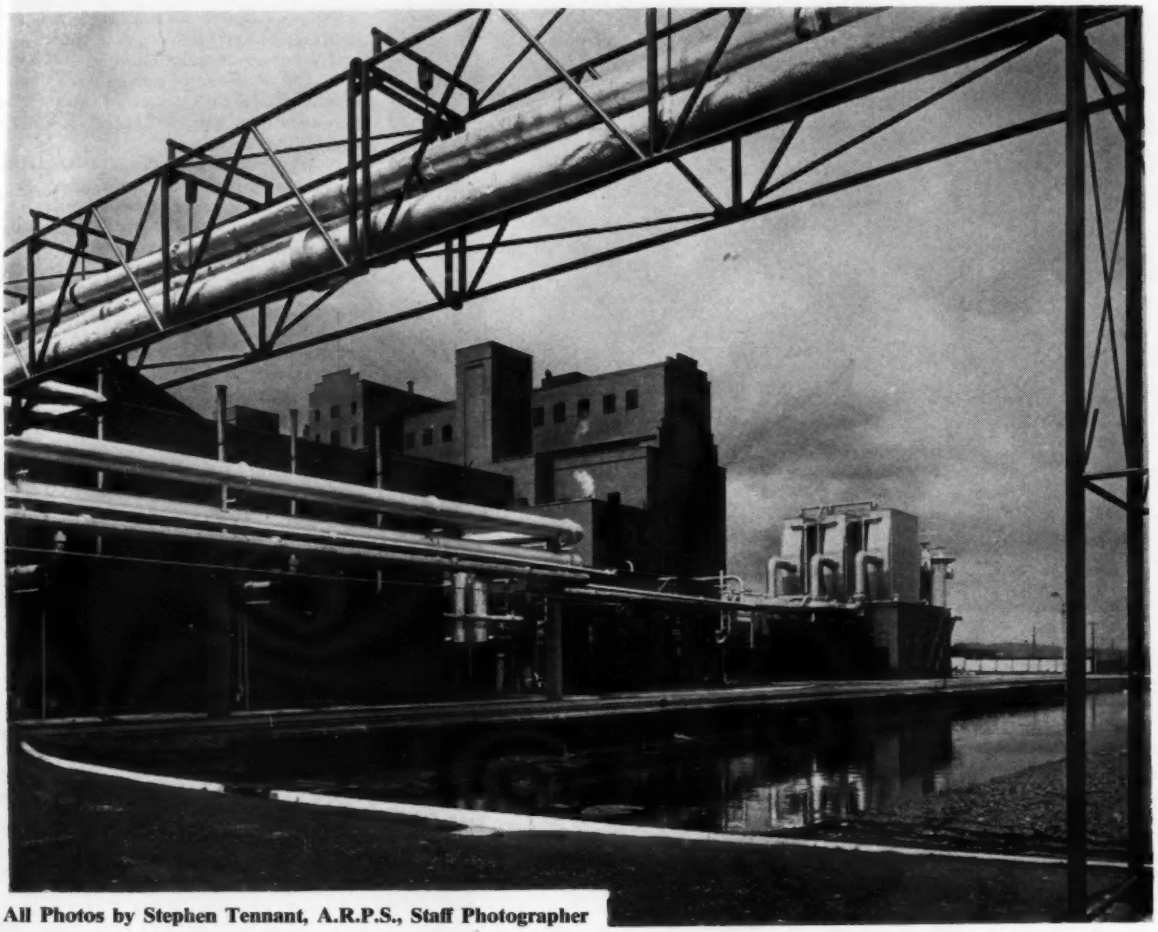
Photograph (2) shows a Loband Loader and train of horizontal conveyors receiving coke from end-tipping lorry on recovery.

Photograph (3) illustrates the end of the conveyor train with a 48′ 0″ piler feeding the portable screen, a 48′ 0″ piler receiving the screened coke and discharging into a rail wagon, and another 48′ 0″ machine receiving the breeze and feeding into a tipping truck.

C. H. JOHNSON (MACHINERY) LTD · ADSWOOD · STOCKPORT · CHESHIRE

Telephone : STOckport 2642/5. *Telegrams :* 'Machinery' Stockport.

London Sales and Service Depot : 38/44 Lower Richmond Road, S.W.14 · · · · · · · · · *Telephone:* Prospect 7671
Scottish Sales and Service Depot : 15 St. James Terrace, Kilmacolm, Renfrewshire · · · · *Telephone:* Kilmacolm 558



All Photos by Stephen Tennant, A.R.P.S., Staff Photographer

General view of the works showing the Derby II and III retort houses, water preheaters, primary condensers and exhaust house.

Today — the largest gasworks in the East Midlands is officially opened at

LITCHURCH

THE new Litchurch gasworks, Derby —the largest in the East Midlands Board area—is to be officially opened today.

Old plant of the original works has been supplemented with three new retort houses each of 5 mill. cu.ft. a day capacity. C.W.G. plant has been doubled by the provision of a fully automatic installation.

But the most important development lies in the new distribution control room, by which all gas from Chesterfield and Stanton coke ovens as well as Litchurch production is directed throughout the Notts and Derby Division or exported to the Leicester and Northants Division.

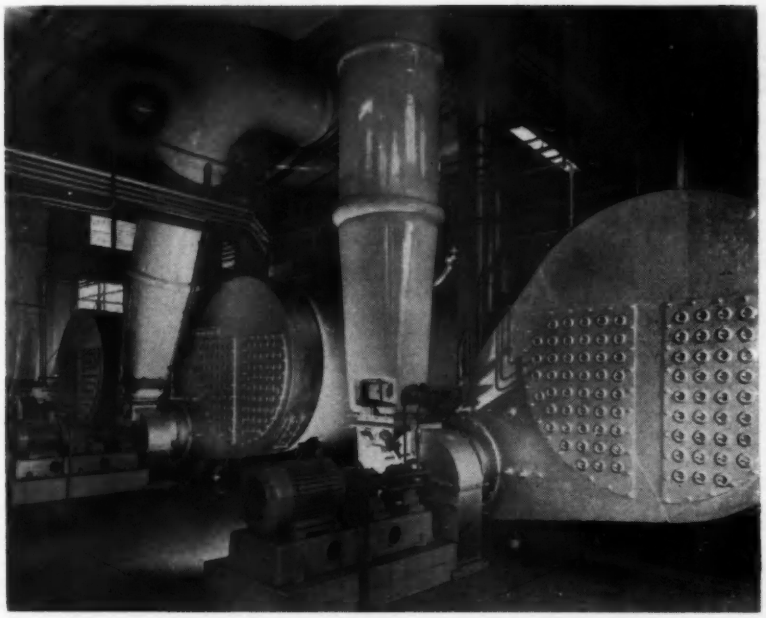
The site of the Litchurch works was provided by the former Midland Railway Company in 1867 by an exchange of lands with the former Derby Gas Light and Coke Company, the latter releasing land upon which the Midland Railway station now stands.

Construction of the original works began in 1867 and reconstruction and extensions took place in 1900, 1908, 1915 and 1928 to meet the growing demand for gas and to effect modernisation.

In 1932, however, the first coke oven gas from Norton, Derbyshire, and the construction of a grid main to bring supplies to Derby meant that Litchurch works was virtually shut down and became a peak load balancing station only. At this time also, the Company's Cavendish Street works was completely closed down for gas manufacture.

But expansion of the area of supply, bulk supplies to neighbouring undertakings and development of the industrial load during the 1939-45 war, caused the gradual increase in the use of the plant at Litchurch. A further extension and much reconstruction was carried out during this period and afterwards, so that in 1949 the capacity of the works had increased to 5 mill. cu.ft. per day of coal gas, 6.5 mill. cu.ft. per day of C.W.G., or a total daily production capacity of 11.5 mill. cu.ft.

Before nationalisation the former Company had laid down plans for considerable extensions to replace obsolete plant, to provide for the expiration of contracts for coke oven gas supplies in 1953 and 1955, and to allow for the



Interior of one of the waste heat boiler houses. Two boilers will normally be in use, with one standby.

steady growth in demand by consumers. These plans have been developed and further expanded by the East Midlands Gas Board, who recognised the value of this site of 75 acres, which could provide amply for further extensions in accordance with its policy of integration and concentration of gas manufacture in large units. Since vesting day the construction and commissioning of new plant has been completed at an approximate cost of £3¾ mill. and has increased the nominal capacity of the works to 18 mill cu.ft. per day of coal gas and 9.5 mill. cu.ft. per day of C.W.G., bringing the total manufacturing capacity of the works to 27.5 mill. cu.ft. per day, which makes Litchurch the largest single manufacturing station in the Board's area.

In the planning of the new works considerable attention was given to the following points:

1. The concentration of plant in the largest practicable size of unit consistent with maximum efficiency in operation and economical supervision.
2. The provision of good working conditions with a high degree of mechanisation to attract suitable labour in a very competitive area.
3. The production from local coals, of coke suitable for all domestic purposes.

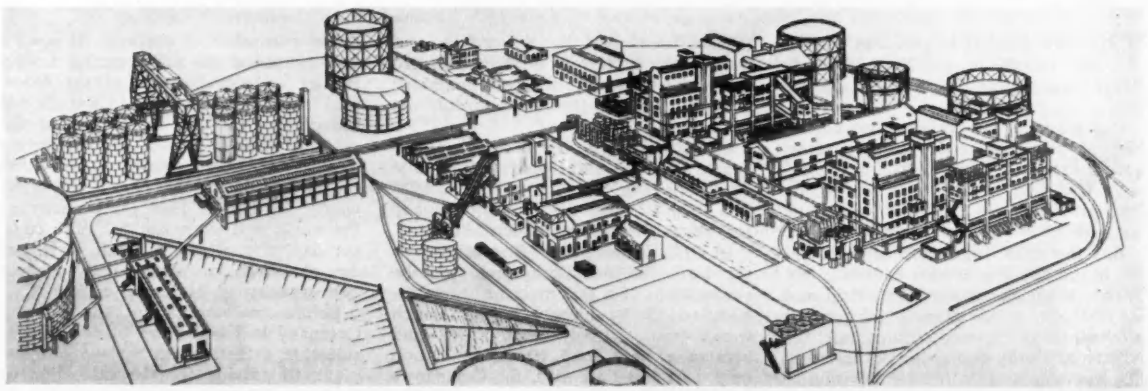
The carbonising plant consists of three new retort houses of Woodall-Duckham continuous vertical retorts of a total capacity of 15 mill. cu.ft. per day, an old retort house of West's continuous vertical retorts of 1 mill. cu.ft. per day, and an old house of Gibbon's horizontal retorts of 2 mill. cu.ft. per day. Of these the horizontal retorts are only used in the winter because of their flexibility.

Retort Houses

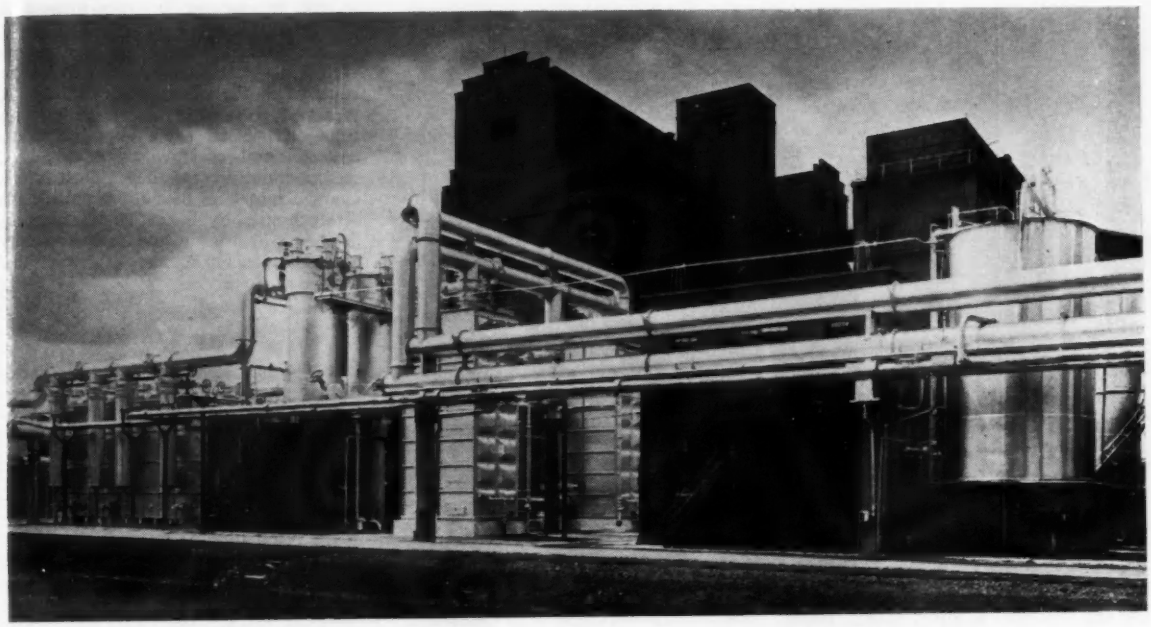
The three new retort houses are steel framed buildings of brick-panelled construction. They are of modern design and similar in size and appearance and contain similar units of carbonising plant. In each retort house are 40 82-in. continuous vertical lambent heated retorts designed and built by the Woodall-Duckham Construction Co., Ltd.

Each of these retort houses processes

Interior of the exhauster house, showing two of the steam-driven Holmes-Connersville exhausters.



A draughtsman's view of the works, clearly showing the two sections of the works divided by the canal. The coal gas plant to the right with the C.W.G. and distribution sections to the left. (By courtesy of the Woodall-Duckham Construction Co., Ltd.)



Ancillary plant showing secondary condensers, detarrers and ammonia scrubbing plant.

360 tons of coal per day with a consumption of 40 tons of coke in its producer plant, for a daily production of 5 mill. cu.ft. of gas, 212 tons of coke and breeze ex retort house and 10,000 lb. of steam per hour. These new retort houses are now known as Derby I, II and III.

Coal handling equipment is assigned to each retort house as follows: One Rotaside tippler to W-D I and West's houses, a second Rotaside tippler to W-D II and W-D III and one ram end tippler for the horizontal house.

Easy Repairs

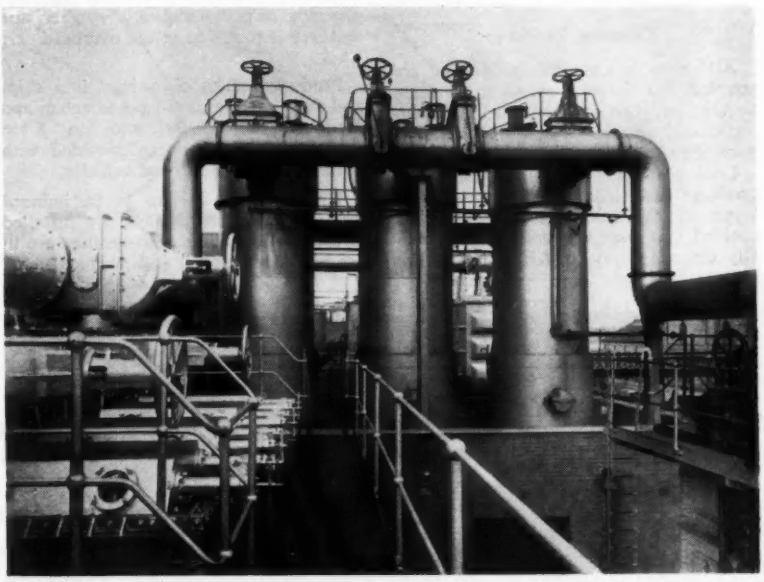
Each bench of 40 82-in. major axis vertical retorts is arranged in two benches of 20 and is provided with one transverse air ventilated division wall, to form two sections of ten retorts and to facilitate repairs to either section.

The two retort benches are arranged in line, while the retorts in each bench are in double line. Any individual retort can be controlled independently of the others.

Full wagons of coal are emptied by Strachan & Henshaw tipplers, each of which is fitted with dust trapping equipment. The coal passes through British Jeffrey-Diamond coal breakers and is then handled by belt conveyors and G.B. conveyor into overhead coal storage hoppers which can hold 750 tons, sufficient for 48 hours' running.

Coke Screening

Coke is discharged from the bottom of the retorts and is handled by belt and gravity bucket conveyors with a capacity of 40 tons per hour and transported to the screening and storage plant. This consists of two independent plants, one for each pair of retort houses. Each are housed in reinforced concrete structures



Boiler water preheaters. With all the ancillary plant there are two gas streams with standby plant usable by either stream. (By courtesy of W. C. Holmes & Co. Ltd.)

which contain duplicate plant of Gyrex screens arranged to grade the coke in the following sizes: No. 1 over 2½ in., No. 2 1¼ in.-2½ in., No. 3 ¾ in.-1¼ in., No. 4 ¾ in.-¾ in. and breeze.

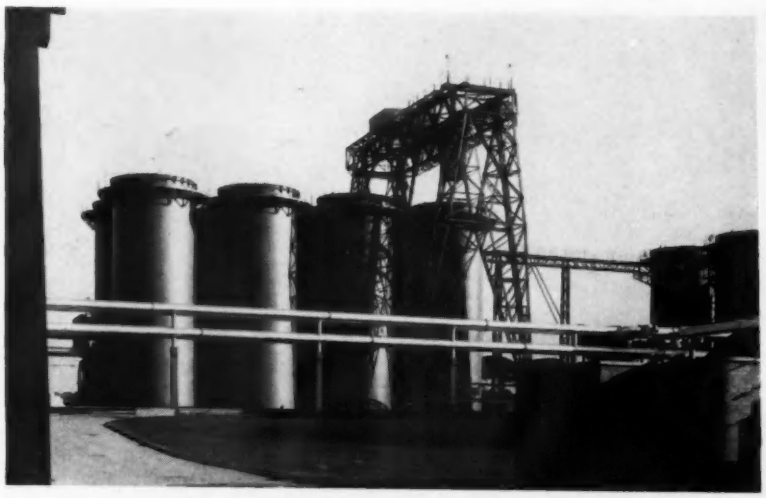
Coke from the horizontal house is carried by a Fleuve conveyor and a skip hoist to the No. 1 screening plant. The No. 4 coke is used exclusively as producer fuel. This particular grade is stocked during the winter for use the following summer when coke production generally falls with the lower demand for gas.

Facilities are available for loading rail and road wagons and there are two bagging platforms for each screening plant. The outlet chutes from each coke storage bunker are equipped with a debreezing screen.

Sequence Interlocked

The control gear for motors operating material handling equipment is centralised and sequence interlocked. The motors are of Lancashire Dynamo and Crypto manufacture while control and interlock equipment is supplied by Brookhirst Switchgear Ltd.

Three hot gas mechanical producers by Humphreys & Glasgow Ltd., are provided in each of the new retort houses



The new tower purifier plant showing one section of the plant and the Goliath crane for lifting out the grids, etc.

complete with hot gas dust separators and the necessary ancillary plant. These units generate hot producer gas for heating the settings and are fitted with annular boilers which generate steam at 20 lb. per sq. in.

Common Producer

All three mechanical producers are coupled to a common producer gas main so that any two may be used for heating the 40 retorts. The remaining producer acts as a common standby.

Coal gas may be admitted into the producer gas stream to provide underfiring of the retorts if it should be decided that such a course is economically desirable. By so doing 40% of the heating requirement may be met, equivalent to a consumption of .75 mill. cu.ft. of coal gas for every 5 mill. cu.ft. of gas made.

No. 4 graded coke is fed to the producers by means of a hand operated charging skip. An Avery weigher and totaliser is provided in the overhead skip track.

Producer ash is discharged into skips and these are elevated by a Strachan and Henshaw skip hoist into an 8-ton capacity elevated hopper provided with bottom discharge to road vehicles.

Three 7 ft. 3 in. by 16 ft. induced draught waste heat boilers are installed in each W-D house. Two boilers are in use with one standby and produce steam at 200 lb. per sq. in., superheated to 500°F.

Dust extraction plant is provided to collect the dust released from the retort coke during the discharging operation. A Sirocco type fan capable of dealing with 5,000 cu.ft. of air per minute and a dust collector both of Davidson & Co., Ltd., manufacture, are installed. Dust is discharged into bags in a room outside the retort house, by means of a discharge cyclone, which is run five minutes before and continues ten minutes after each discharge of coke.

Vacuum Cleaning

A vacuum cleaning plant of Sturtevant's manufacture has also been installed and connection points are provided at all levels for hose extensions. The dust collected is also discharged and bagged outside the retort house.

Locker rooms, messing accommodation, lavatories and showers, are included in the installation and are sited at rodding platform level.

Gas from the retort houses passes first to feed water heaters in 36-in. diameter overhead welded steel gas mains supported on reinforced concrete columns. All gas mains up to the inlet of the multi-film washers are stress-relieved by heat treatment.

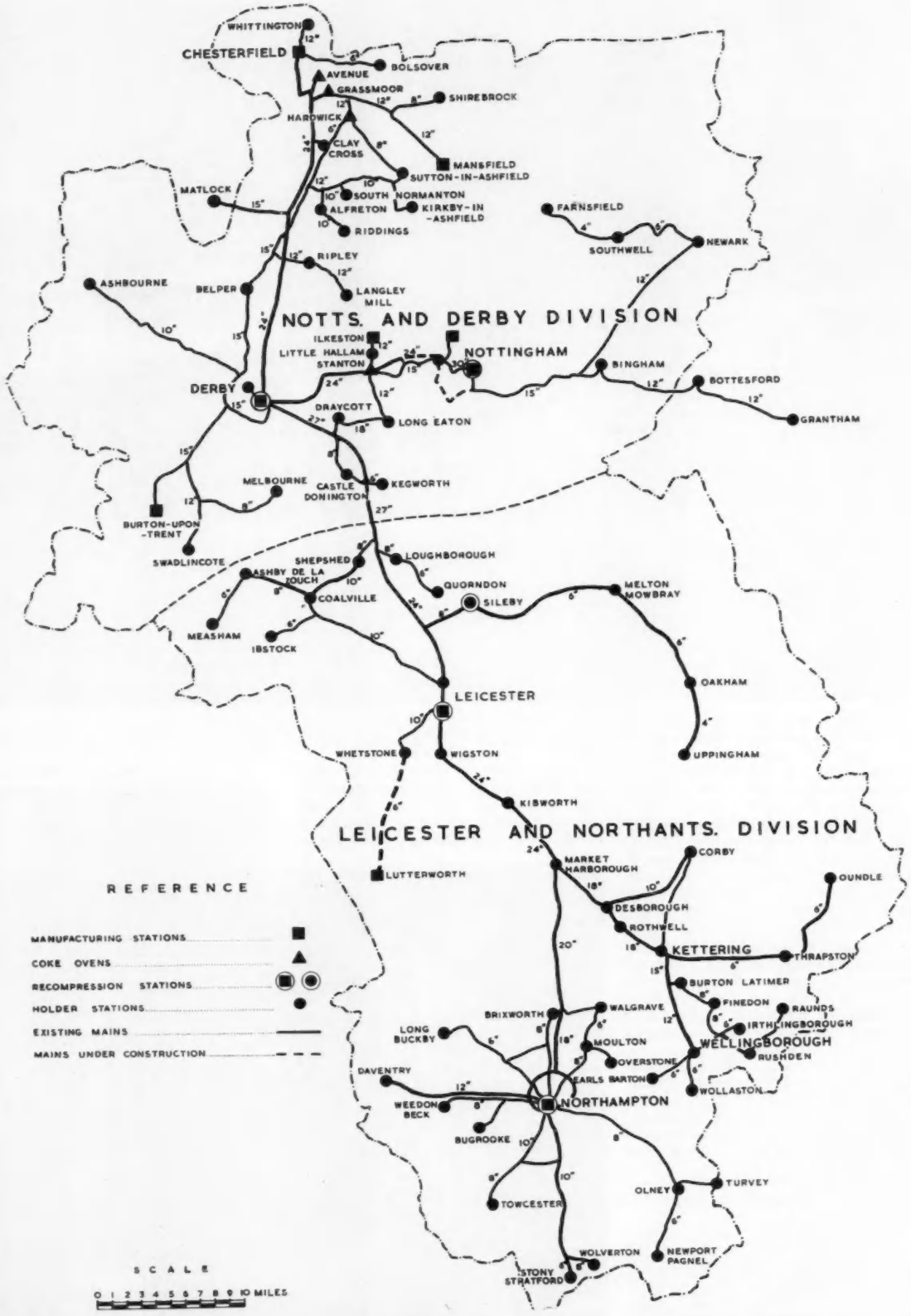
Two streams of gas—one from Derby I and West's retort houses, the other from Derby II and III retort houses—are taken through the washing plant as separate streams but are interconnected so that mixing of the gases can take place.

Boiler Feed

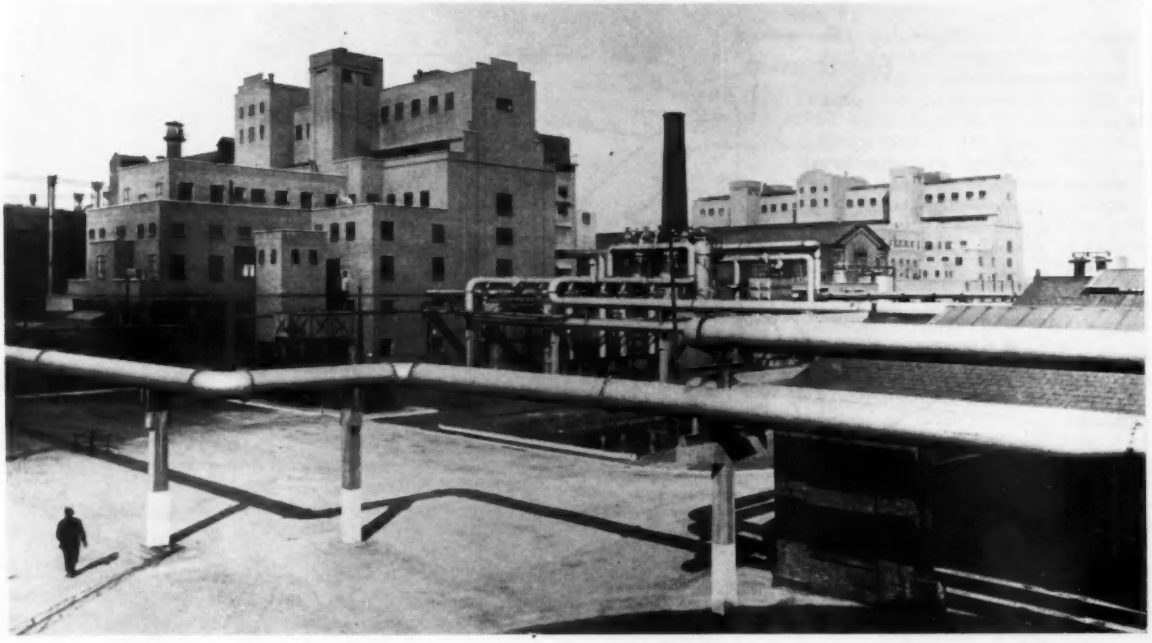
The two boiler feed water heaters of 5,400 gal. per hour capacity designed by W. C. Holmes & Co., Ltd., can deal with 12 mill. cu.ft. of cool gas per day and are arranged to work in parallel. Raw water is fed through the heaters and heated to within 10°F. of the hot gas temperature, and is passed to the water softening plant for treatment. The gas passes from the feed water heaters to the primary condensers. These consist of three vertical tube condensers designed and manufactured by W. C. Holmes & Co., Ltd., each with a capacity of 12 mill. cu.ft. per day. There are one gas pass and 12 water passes, with cross tube flow for the gas. All the condensers work in parallel, with one acting as common standby. To save ground space and to facilitate handling of the condensate by gravity run-off these primary condensers are situated on the roof of the pump house serving the ancillary plant. The condensate from the feed water heaters and the hot end of the primary condeners is taken from the seal pots to a hot tar and liquor separator. The condensate from the cold end of the condensers is taken to a cold separator.

The two separators, one hot and one cold, of cast iron construction, are situated adjacent to the ancillary plant pump house. Virgin liquor from the hot separator is pumped to two cast iron overhead feed tanks supplying the

Interior of one of the new retort houses at producer charging level.



A diagram showing the 'back-bone' main between Chesterfield, Derby, Leicester and Northampton, with the nerve centre at Derby, and the connections between the Sheffield division at Matlock and the Lincolnshire division at Grantham. Gas made in Chesterfield may be recompressed at Derby and transmitted southward to the Leicester and Northants division for redistribution as far south as Buckinghamshire.



General view showing Derby I and West's retort house on the left and Derby II and III in the right background with the horizontal retort house in between.

ammonia washers after cooling in rack coolers. The overflows from the separators are led to an underground tar and liquor separating and storage tank and thence to the raw tar and liquor storage tanks.

The water is circulated in an enclosed system with a percentage bleed-off for boiler feed and coke quenching. The condensing plant is arranged for gravity flow of hot water to induced draught, cell type, film flow coolers, designed and installed by Davenport Engineering Co. Ltd. From the cooler pond the circulating pumps extract and deliver the cooled water to the last passes of the gas condensers. From the primary coolers the gas passes to the exhauster house.

There are four Boston type Holmes Connersville exhausters 20 in. by 50 in. which are each direct coupled to a two-crank vertical steam engine of W. H. Allen, Sons & Co., Ltd., manufacture. Each exhauster is rated at 500,000 cu.ft. per hour of crude gas against a pressure difference of 60 in. W.G. The engines are driven by steam at 190 lb. per sq. in., with a 100°F. superheat, and exhaust against a back pressure of 20 lb. per sq. in. under all conditions. A hydraulic regulator controls the steam throttle valves and maintains a constant suction on the gas inlet.

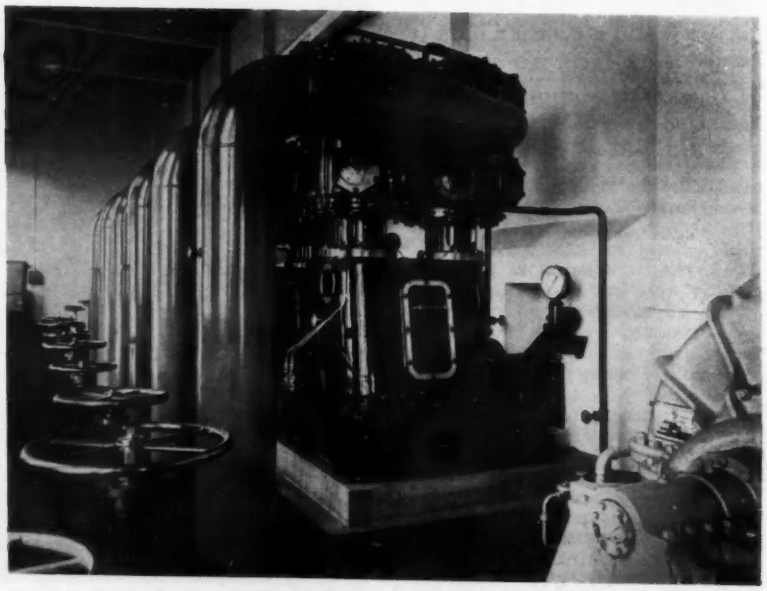
Detarrers

Two reconditioned and rebuilt Whessoe horizontal tube condensers are sited at the outlet of the exhauster for reducing the temperature due to compression. From these secondary condensers the gas passes to the electro-static detarrers.

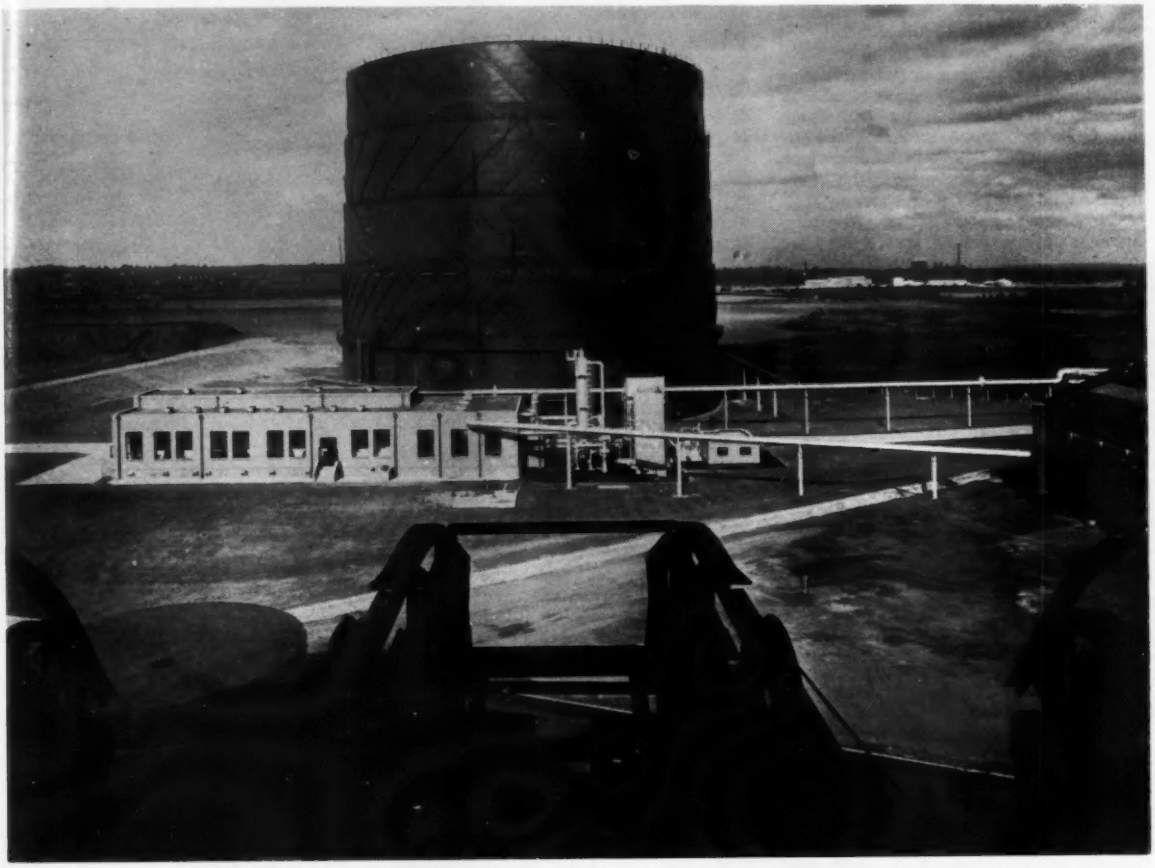
There are three Holmes 'Elex'-electrostatic detarrers each of 12 mill. cu.ft. per day capacity, with one acting as standby. They are designed to extract 99.5% ±.5% tar fog at 60-70°, with a total pressure loss of ¼ in. W.G., and are located on the roof of the building which house the three transformer rectifier sets. These supply the operating current as required up to 30,000 volts D.C. from two phase A.C. at 415 volts.

From the electro-static detarrers the gas passes to the multi-film ammonia washing plant, which is of the brush type multi-film washer in cast iron cases supplied by W. C. Holmes Ltd. There is a total of four washers arranged in two streams of two units, each with four chambers per unit. The pumps are Lee Howl quadruple monobloc horizontal split casing centrifugal type and the washing medium is water and virgin liquor. The gas passes from the multi-film washers through 30 in. diameter steel overhead gas mains to a meter house adjacent to the tower purifiers.

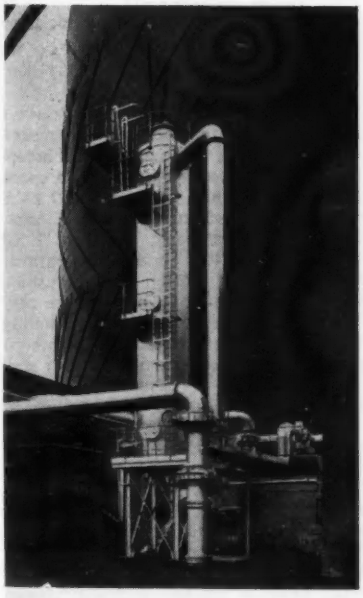
There are two Holmes Connersville coal gas meters, 24 in. by 72 in., each with a normal rated capacity of 12.6 mill. cu.ft. per day.



The interior of the compressor house showing the gas side of the electrically driven compressors and the curtain wall dividing it from the electrical side.



The compressor and booster house stand on what was formerly the oxide store but is surrounded now by an attractively grassed expanse. In the background is the new 6 mill. cu.ft. holder.



The Holmes dri-gas plant at the outlet of the medium pressure system from the compressor house. At the outlet of this plant the dry gas meets the incoming coke oven gas and returns for recompressing before passing into the high pressure grid system.

The gas purification plant which has been designed and constructed by W. C. Holmes & Co. Ltd., Huddersfield, is of the tower type, and is designed to purify 24 mill. cu.ft. per day of gas. The whole plant comprises two sets operating in parallel, each set being capable of purifying half the total throughput. Gas is brought to the plant by two 30 in. diameter mains and is conveyed into the plant through pneumatically-operated valves supplied by Westwood and Wrights Ltd., which enable it to pass in sequence through the set and allows the rotation to be altered as required or any tower to be taken out of series for oxide changing. Containers are handled by a Goliath travelling crane capable of a 60-ton lift.

All inert gas for the purging of towers prior to opening to or closing from atmosphere is generated in a Holmes inert gas generator.

All reinforced concrete foundation work for the tower purifier and for the oxide handling plant was carried out by Holst & Co., Ltd.

From the two sets of tower purifiers the gas is fed to a mixing point—where the mains increase in diameter from 30 in. to 36 in.—which is at the inlet to the next 6 mill. cu.ft. capacity gasholder supplied by Clayton Son Co., Ltd., of Leeds. At the express wish of the East Midlands Gas Board, this holder is rivetted throughout.

From the underground tar and liquor separator tar and liquor are pumped to storage tanks in the tank bund. There are five prestressed concrete storage tanks grouped in a bund below general ground level and served by a pump house and overhead reinforced concrete loading gantry for road and rail traffic. The tanks are stressed horizontally by the Magnel-Blaton system and have self-supporting domed tops. The tar and liquor pumps have been supplied by British LaBour Pump Co., Ltd., and all pre-stressed concrete work carried out by Holst & Co., Ltd.

Of these tanks, two are used for storing tar and have a capacity of 180,000 gal. each, one for weak liquor with a capacity of 672,000 gal., one for spent liquor with a capacity of 672,000 gal., and one for concentrated liquor with a capacity of 50,000 gal.

There are two concentrated liquor plants, one a new plant supplied by Newton Chambers & Co., Ltd., of the liquid phase type, and the other an older plant rearranged and extended by W. C. Holmes & Co., Ltd.

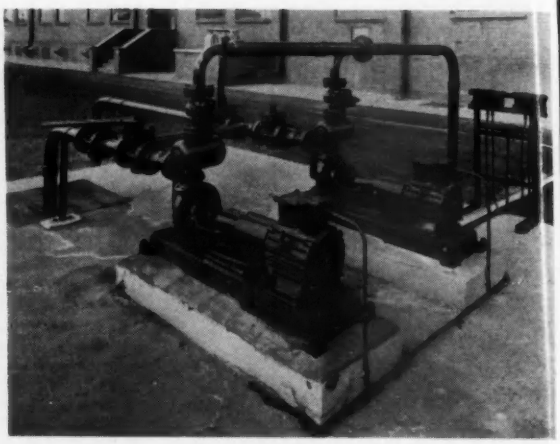
Both plants are continuous and automatic in operation and require a minimum of supervision. They are capable of dealing with 1,500 gal. of weak liquor

per hour to produce a concentrated liquor of 20-25% ammonia content.

The spent liquor from the concentrated liquor plant is pumped through a set of rack coolers into an effluent balancer tank situated in the bund. From this tank the liquor is discharged by gravity through a Lea recorder unit which measures, controls and records the quantity passing into the main sewer.

Carburetted water gas is manufactured in two plants, each of two machines, manufactured by Humphreys and Glasgow Ltd. The old plant, with a total output of 4.7 mill. cu.ft. per day, is hand clinkered but is being retained in service. The new plant, fully automatic, self clinkering and hydraulically operated, has a capacity of 4.8 mill. cu.ft. per day. These machines are fitted with annular boilers operating at 20 lb. per sq. in. and carburettors designed to use gas oil for enrichment.

Condensate pumps are by British La Bour Pump Co., Ltd., are particularly suitable for intermittent use since they are self priming by the recirculation of liquor within the pump casing, operate without foot valves and can work on a long suction up to 23 ft. at 20 in. of mercury.



Waste Heat

The plant incorporates special equipment for the production of C.W.G. having a calorific value exceeding 600 B.Th.U. waste heat boilers operating at 200 lb. per sq. in. and at 100°F. superheat are incorporated in the installation and these are designed to feed into the high pressure steam system feeding the turbo-alternators. Low pressure steam from the works low pressure system, together with the output of the annular boilers, is used for process work.

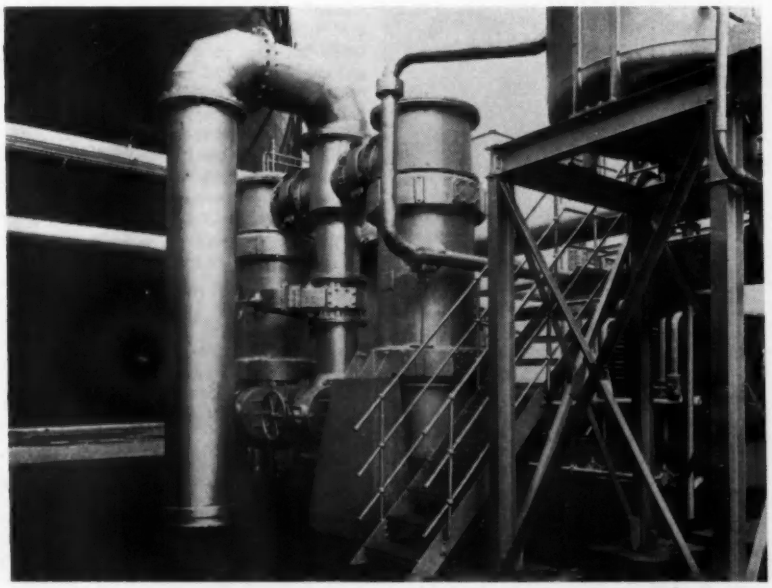
The coke for both plants is handled from rail wagons by a 20-ton Rotaside discharge wagon tippler into a hopper feeding two fully automatic angle skip hoists which are arranged side by side, each with a capacity of 20 tons per hour. The skips travel over coke hoppers supplying the four C.W.G. machines and discharge into any one of the four hoppers as required. This equipment is also employed to handle breeze to overhead hoppers feeding a nearby battery of four Lancashire boilers. A traversing breeze conveyor operates under the bunkers, removing all breeze extracted from the coke prior to feeding into the C.W.G. generators and discharging via a buffer hopper to the angle skip hoists for elevation to the boiler feed hoppers.

Ancillary plant in connection with the C.W.G. extensions includes a concrete tar separator and a Sharples centrifuge for dealing with tar emulsions. Pumps for dealing with the recirculated water, tar and gas oil are housed at the end of the tar separator. The plant extensions have also necessitated the installation of new condensing and electro-detarring plants. The condenser, designed by Humphreys & Glasgow Ltd., is of the spiral vertical tube multi-pass type while the two detarrers of the W. C. Holmes & Co., Ltd., Elex design, each have a capacity of 6 mill. cu.ft. of gas per day.

Two new 6 mill. cu.ft. per day 16 in. by 39 in. C.W.G. Holmes Connersville exhausters direct driven by Belliss & Morcom Ltd. steam engines and two 16 in. by 48 in. 6 mill. cu.ft. per day Holmes Connersville meters have been installed. After metering the C.W.G. mixes with the coal gas for purification.

The continuous vertical retort installations and the two new units of carburetted water gas plant are provided with waste heat boilers raising steam at 200 lb. per sq. in., superheated to 500°F. This steam is utilised to drive the exhausters, boiler feed pumps and turbo-alternators. All other units of the manufacturing plant are electrically driven.

The turbo-alternator plant consists of two 1,000 kW C.M.R. self-contained pass-out condensing turbines of W. H. Allen Sons & Co., Ltd., design and manufacture incorporating a system of inlet pressure governing in association with automatic nozzle control.



The Serck after coolers which are located between the distribution station meters and the dri-gas plant.

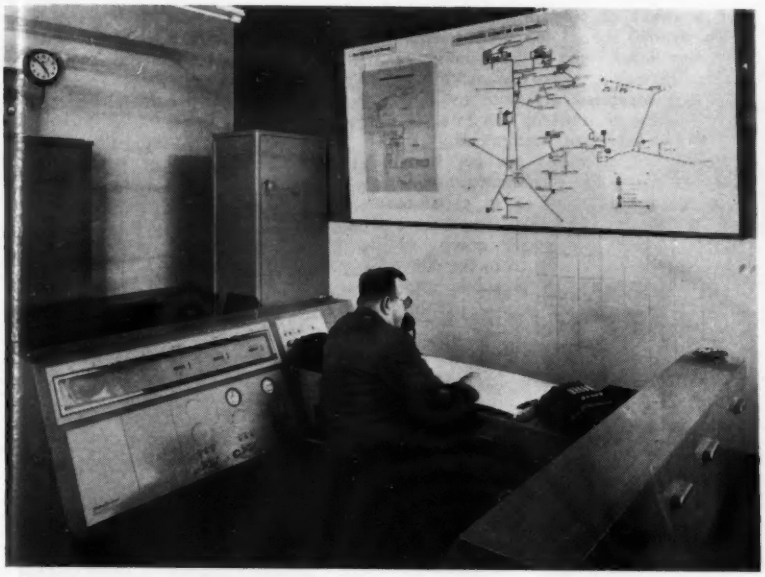
Impulse Turbine

Each machine comprises a high speed multi-stage axial flow impulse turbine of the extraction type. This runs at a speed of 8,000 r.p.m. and drives a 1,250 kVA alternator, manufactured by the Electric Construction Company, Ltd., at 1,000 r.p.m. through top pinion type parallel shaft reduction gearing. Each turbine exhausts to a self-contained surface condenser and is complete with circulating water and condensate extraction pumps mechanically driven from the steam end.

Each turbine is designed to utilise steam from the waste heat boilers at 190 lb. per sq. in. at 483°F. and pass-out demands up to a maximum of 11,500 lb. per hour steam are met automatically.

The alternators, which are of the salient pole revolving field type, are totally enclosed and include a closed air circuit with water-cooled air coolers. The exciters of the shunt wound interpolar type have a totally enclosed cooled frame. The maximum continuous rating for each unit is 1,000 kW at .8 power factor and the machines are wound for a 415-volt, 50-cycle, three-phase supply.

The turbines are fitted with inlet pressure control valves which automatically



The interior of the control room. The controller is seen at his desk in communication with one of the coke oven plants. In front of him is seen a diagrammatic layout of the 'back-bone' main and the connections to other divisions.

maintain the works steam pressure and are also provided with an automatic pressure control valve between the first and second stages. This latter valve regulates the pass-out steam quantity to maintain the low pressure steam system at 20 lb. per sq. in. The balance passing forward to the low pressure end of the turbine is condensed.

The alternators run in parallel with the public supply system and, under normal conditions, surplus electricity is available for the gas grid compressing station or for export to the Electricity Board.

The D.C. requirements of the works are provided by two 200 kW mercury arc rectifiers.

The exhauster engines also discharge their steam into the 20 lb. per sq. in. system which is used for process requirements throughout the works.

Railway Sidings

The new railway sidings are constructed on an embankment running from the canal down to the river pumping station. This embankment was formed by the International Development Co. (Nottingham), Ltd., who made use of materials from an old tip.

The main fan of sidings is in nine parallel lines with a single connection from the British Railways main line. Approximately four miles of new track, including more than 30 new turn-outs, were laid on the embankment and in the works by Grant Lyon & Co., Ltd. The rails are of 95 lb. R.B.S. bull head rail and are laid on 10 in. by 5 in. softwood sleepers. All road crossings are double checked.

The reconstruction of existing sidings was carried out by Thos. Ward, Ltd., of Sheffield.

The sidings are lighted by 30 Crompton sodium lamps hung from Stanton reinforced spun concrete lighting columns. The whole of the lighting system was installed by N. R. Kirk & Co., Ltd.

Two Avery 40-ton weighing capacity rail weighbridges and weigh office are sited on the outlet side of the ladder sidings feeding the works, one being used for incoming traffic, the other for outgoing.

The whole of the works roadways totalling over a mile in length, and approximately 1,000 sq. yd. of concrete paving have been reconstructed in part by Woodall-Duckham and in part by direct labour.

Two Avery road weighbridges, each with a weighing capacity of 20 tons and including a weigh office, were installed near the works entrance in a position which enables incoming and outgoing traffic to be weighed separately and traffic not required to be weighed to by-pass the weighbridges.

Graded coke is taken by road from the coke hoppers adjacent to the retort houses to the stocking area where it is discharged, by tipping, into a portable conveyor and elevator system, designed and supplied by C. H. Johnson (Machinery), Ltd., on to the main stock piles. Separate stock piles are kept for each grade of coke and breeze. Coke out of stock is fed by mechanical shovels and Leband loaders on to the horizontal Hylo-veyors, six of which can work in tandem giving a total conveying distance of 288 ft. The horizontal Hylo-veyors discharge on to a Hylo elevator which, in turn, feeds on to a mobile re-screening plant; from this the coke is discharged into either lorries or railway wagons. Each conveyor is fully portable and is designed to have a belt speed of 480 ft. per minute, delivering up to 90 tons of coke per hour.

Gasholder

A new four-lift spiral-guided gasholder in a steel tank has been erected by Clayton, Son & Co., Ltd., Leeds, as part of the new storage distribution. The holder is of 6 mill. cu.ft. capacity, with a tank 230 ft. in diameter by 42 ft. deep. Of all-riveted construction, the tank holds approximately 11 mill. gal. of water.

Anti-freezing precautions consist of a hot water system for which water is taken from the gasholder tank into a small feed tank. The level of water in the feed tank is controlled by a float valve and the heat is provided by low pressure steam. The hot water is pumped by two-stage centrifugal pumps into the anti-freeze ring main from which it is distributed to the respective anti-freeze injectors.

The gas passes from the holder to the grid meter and compressor house. Here the gas is split into two streams. One stream is taken through a 28-in. by 84-in. Holmes Connersville meter rated at 19.2 mill. cu.ft. of gas per day and transferred

Many manual workers at Litchurch are either new to the industry or have no particular reason to respect it. To instil a pride in the new plant and improve works relations, open days for workers' families were instituted and a series of special posters, printed in fluorescent inks, was produced. Examples of the latter are exhibited here by Mr. A. W. Elliott, Mr. L. W. Jarrett, and Mr. H. W. Kenworthy. The posters were produced as a result of discussion with the Derby Joint Consultative Committee.

by two Bryan Donkin VMP. 80 Rateau turbo-boosters, each of 1 mill. cu.ft. of gas per hour capacity to the works gasholders for distribution. The two boosters which throw a pressure difference of 12-in. W.G. at 2,680 r.p.m. are driven by drip-proof continuously rated squirrel cage induction motors manufactured by the Lancashire Dynamo Co., Ltd. The other stream passes through a 24-in. by 72-in. Holmes Connersville meter, rated at 12.6 mill. cu.ft. of gas per day, to the medium pressure grid compressors.

There are three M.13R.G. reciprocating compressors, supplied by Belliss & Morcom, Ltd. All three are twin-cylinder, 24-in. diameter by 12-in. stroke, but one is run at constant speed while the other can be run at variable speeds. Each is capable of a maximum intake of free gas of 280,000 cu.ft. per hour and deliver it at a pressure of 15 lb. per sq. in. while running at 375 r.p.m. The variable speed compressors may be run as slowly as 80 r.pm. with their capacities varying with their speeds. The constant speed machine drive is an auto-synchronous duct ventilated motor and the variable speed machines are driven by D.C. motors which incorporate Neviton grid controlled rectifiers. Both types of motor and the rectifier are manufactured by the Lancashire Dynamo Co., Ltd.

The medium pressure after coolers are manufactured by W. C. Holmes Ltd., and are designed to receive a volume of gas up to 12 mill. cu.ft. per day, measured at 30 in. Hg. and 60°F., after compression in reciprocating compressors from approximately atmospheric pressure to 15 lb. per sq. in. gauge, and with a rise in gas temperature of 115°F. and to reduce this temperature to within 5°F. of the cooling water entry temperatures. The casing is rectangular, and is designed to give two gas passes. From the after coolers the gas passes to the dri-gas plant.

Tower Scrubber

The plant has been designed by W. C. Holmes & Co. Ltd., and is capable of dealing with 12 mill. cu.ft. per day as measured at 30 in. Hg. and 60°F., but compressed to pressures between 10 and 15 lb. per sq. in. gauge. After being reduced to approximately atmospheric temperature the water content of the gas actually entering the plant will be reduced by 60%. The plant comprises a tower scrubber for gas washing, together with evaporating and cooling apparatus, circulating pumps, connections, etc. At the outlet from the dri-gas plant incoming coke oven gas is mixed with the gas from the dri-gas plant. This is then conveyed back into the compressor house to the high pressure recompression machines. These are centrifugal compressors supplied and installed by the British Thomson-Houston Co. Ltd.

There are three of these centrifugal compressors, each designed to deal with 1.2 mill. cu.ft. saturated gas per hour, measured at gauge pressure and capable of compressing from 15 lb. per sq. in. to 24 lb. per sq. in. gauge at an inlet temperature of 50°F. and a specific gravity of the gas of 0.48. All the machines have a speed of 6,400 r.p.m. and are driven by 650 H.P., 1,485 r.p.m. double pipe ventilated slip ring induction motors, through a speed increasing gear box. The machines are able to work either as separate units or two in series, and are capable of compressing 1.5 mill. cu.ft. of saturated gas per hour, measured at normal temperature and pressure, from 15 lb. per sq. in. gauge to 35 lb. per sq. in., at an inlet temperature of 50°F. and a gas specific gravity of .48. The gas then passes from the compressors to the high pressure after coolers.

Grid Main

These after coolers are designed by Serck Radiators Ltd., and are designed to work in parallel and be capable of cooling 1.5 mill. cu.ft. per hour of gas at 35 lb. per sq. in. from 160°F. to 90°F. when supplied with cooling water at 70°F. with a pressure drop through these vessels not exceeding .25 lb. per sq. in. From the high pressure after coolers the gas passes into the Leicester grid main.

The grid mains connecting the larger coke oven plants, at Stanton and Avenue, converge on Litchurch and are designed to give a terminal pressure there of 15 lb. per sq. in. The recriprocating compressors are used to pump gas from Litchchurch which is surplus to the local requirements, into the medium pressure system which is connected, also at Litchurch, to the bulk supply main feeding the Leicester and Northants. Division. At 15 lb. per sq. in. approximately 900,000 cu.ft. per hour is transmitted to Leicester and for quantities above this figures the centrifugal compressors are used.

The Litchurch works is the focal point of the grid control system and, depending on its storage capacity, it is able to meet either fluctuations in demand at any part of the system or compensate for variations of input from other sources of supply. To exercise control of the manufacture and supply throughout the system a control centre has been set up at Litchurch. There, information is received by telephone from the larger works and gasholder stations. The information is available at two-hourly intervals and includes gasholder stocks, gas inputs to and gas outputs from the grid. The Board has no shift staff at the coke oven plants and a telemetering system is provided to give remote readings of volumes of gas fed into the grid, together with its pressure and calorific value. To facilitate the smooth working of the grid, instantaneous control over the larger quantities of gas distributed is achieved by remotely controlled governors installed at the Stanton coke oven plant which in turn control the gas flow to Nottingham, Long Eaton and Derby. A similar system is to be installed at South Wingfield to control the distribution of gas from the 'backbone main' to an area including Alfreton, Riddings, Sutton-in-Ashfield, Ripley and Langley Mill.

The equipment was installed by Standard Telephones & Cables, Ltd., and makes use of private wires rented from the G.P.O. In order to economise in rental only one circuit is rented between Litchurch and Chesterfield, since the equipment at Chesterfield repeats the meter readings from the northern coke ovens to Litchurch.

The equipment is designed to function at a nominal voltage of 50 volts D.C. with operational limits of from 46 to 54 volts to give continuous indications of volume, pressure and calorific value, with remote control, and indication of, the volumetric governors together with simultaneous telephony between Litchurch and the coke oven plants.

Information is transmitted in the form of a coded signal, and consists of a definite number of pulses, the intelligence of which is conveyed by the polarity of the pulse. The indication code always consists of a constant total of 22 pulses, transmitted at seven to nine impulses per second.

LIST OF CONTRACTORS

Carbonising plants, Roads and drainage, Compressor and meter building	*Woodall-Duckham Construction Co., Ltd.*
Ancillary plant (condensers, detarrers, multi-film washers, exhausters, tower purifiers), Concentrated liquor plants, Medium pressure compressed gas cooler, Medium pressure dri-gas plant, Steel gas connections, Gas valves, Meters	*W. C. Holmes & Co., Ltd.*
Ancillary plant foundations, Gasholder foundations, Machinery foundations, Gas main supports, C.W.G. plant foundations, Pre-stressed concrete tar and liquor tanks	*Holst & Co., Ltd.*
Turbo-alternators—Turbines	*W. H. Allen Sons & Co., Ltd.*
Compressors, H.T. switchgear	*British Thomson-Houston Co., Ltd.*
Compressors	*Belliss & Morcom Ltd.*
C.W.G. plants	*Humphreys & Glasgow Ltd.*
Railway sidings	*Grant Lyon & Co., Ltd.*
Gasholder, Steel gas connections	*Clayton Son & Co., Ltd.*
Water cooling towers	*Davenport Engineering Co., Ltd.*
Turbo-alternators—alternators, switchgear and rectifiers	*Electric Construction Co., Ltd.*
Tiling—turbo-alternator building and ancillary plant buildings	*A. Wood & Co. (Longton) Ltd.*
Precast roofs—turbo-alternator buildings and ancillary plant buildings	*Evans Bros. (Concrete) Ltd.*
Water softening plant	*John Thompson-Kennicott Ltd.*
Underground tar, liquor and water tanks	*F. C. Construction Co., Ltd.*
Railway sidings	*Thos. W. Ward Ltd.*
Road and rail weighbridges	*W. & T. Avery Ltd.*
Diesel locomotive	*Ruston & Hornsby Ltd.*
Concentrated liquor plants	*Newton Chambers & Co., Ltd.*
Portable coke handling plant	*C. H. Johnson (Machinery) Ltd.*
H.P. compressed gas cooler	*Serck Radiators Ltd.*
Earth moving works	*R. Cripps & Co., Ltd.*
Earth moving works	*International Development Co. (Notm.) Ltd.*
Steam pipe lagging	*The Cork Insulation and Asbestos Co., Ltd.*
Steam pipe lagging	*The Darlington Insulation Co., Ltd.*
Steam pipe lagging	*Joseph Nadin Ltd.*
Steam pipe lagging	*Kitsons Insulations Ltd.*
Structural steelwork	*D. Chattaway & Sons Ltd.*
Structural steelwork	*Stokes, Taylor & Shaw Ltd.*
Underground C.I. connections	*Stanton Ironworks Co., Ltd.*
Supply and laying electric cables	*British Insulated Callenders Cables Ltd.*
Compressors, Gas valves	*The Bryan Donkin Co., Ltd.*
Electric motors, L.T. switchgear	*Lancashire Dynamo Nevelin Ltd.*
Steel flooring	*Steelway Ltd.*
Steam mains	*Aiton & Co., Ltd.*
Steam mains	*Power Piping Co., Ltd.*
Water pumps	*Worthington Simpson Ltd.*
Tar and liquor pumps	*The 'Drum' Engineering Co., Ltd.*
Tar and liquor pumps	*British LaBour Pumps Co., Ltd.*
Gas valves	*Westwood & Wrights Ltd.*

N.E.G.B. Designs Exhibit to Serve Two Shows

★

Right, general view of the stand; left, the Se-Duct system which was one of the main features.

★

TWO exhibitions were recently sponsored in Leeds by Modern Exhibition Services, Ltd., in conjunction with the *Yorkshire Post*—the Yorkshire Modern Homes and Food Exhibition and the Yorkshire Building Trades and Public Works Exhibition.

As there was an interval of only ten days between the two, the North Eastern Gas Board planned one exhibit to serve both shows and this took the form of a two-storey stand representing a section of an actual house. The Board are the main distributors in the area for the Radiation Ductair system of heating and it was decided to make it the principal feature around which the stand was designed.

An actual Radiation ducted warm air system was installed including a gas-fired chimney furnace unit in the kitchen; warm air grilles were let into the hall, landing, two upper rooms, and bathroom.

The second important exhibit featured on the stand was an example of the Se-Duct system of a single duct for the installation of balanced flue appliances in multi-storey buildings, which enables balanced flue appliances to be sited on internal walls.

A third feature consisted of an alternative system of ducted warm air heating, namely, the new Halcyon selective warm air system manufactured by Wm. Sugg & Co., Ltd.

There was also a display of appliances of conventional design.

'Dockers' Umbrella'

The contract for the dismantling and removal of the well-known Liverpool Overhead Railway—known as the 'Dockers' Umbrella'—along with its entire rolling stock, has been awarded to George Cohen Sons and Co., Ltd., a member of the '600' Group of Companies.

B.M.A. Report is Criticised by Gas Board Doctor

SOME criticism of the British Medical Association's recent report and recommendations on coal gas poisoning have been voiced by Dr. G. O. Hughes, Convener of the Medical Officers' Committee of the North Western Gas Board, writing in the official journal of the B.M.A.

Writing on behalf of the chief medical officers of the area gas boards, Dr. Hughes says it is felt there are some parts of the B.M.A. report 'in which the emphasis has been misplaced, so that people ignorant of the hazards of carbon monoxide might easily be misled.'

Bad Working Rule

He refers to the report's statement: 'An air-line or oxygen breathing apparatus is the only safeguard for more than short exposures,' and says this would seem to imply that, if the exposure to gas is short, no air-line or other breathing apparatus is necessary.

'Scientifically this is a true statement,' he continues, 'but it is an extremely bad working rule, because a man working with gas can very rarely know when the exposure is going to be so short that he will not need to take precautions.

He refers also to the report's statement that a canister gas mask is of strictly limited benefit, and says this also is open to criticism because it implies that there are certain circumstances in which it is a safe appliance. Such appliances are not approved by the factory department of the Ministry of Labour, and for very good reasons.

They are dangerous because the catalyst wears out and there is no means of knowing when it is worn out; if the catalyst breaks down the wearer is likely to come to serious harm without finding this out; and they are quite useless in an atmosphere which contains less than the amount of oxygen necessary to maintain life.

Another statement quoted by Dr. Hughes is: 'This process of elimination is hastened by the administration of pure oxygen; if the patient's breathing is weak the oxygen administration should be supplemented by some form of artificial respiration.' This again is an accurate statement, he comments, but it places the emphasis upon the administration of oxygen and not of artificial respiration.

Must be Given

'A man who needs oxygen may well recover without it; a man who needs artificial respiration must be given this treatment. Undue emphasis on the administration of oxygen might well lead to artificial respiration being delayed in order to fetch an oxygen apparatus, or even be omittted while oxygen is being given.'

Dr. Hughes says it is unfortunate that the recommendations of the committee make no mention of the importance of manual artificial respiration or the importance of training in this, and adds that it is a pity compressed air breathing apparatus is not mentioned

COMPANY NEWS

'A YEAR OF FRUSTRATION AND RETRENCHMENT'

Glover and Main Chief on Adverse Trading Conditions

IN his statement accompanying the annual report, Col. W. R. Glover, C.M.G., D.S.O., Chairman of Glover & Main, Ltd., said: 'The adverse trading conditions imposed upon our principal markets by reason of restrictions upon credit became more pronounced in 1956 and the output of all but one of our subsidiary companies in this country was affected.'

After explaining that though the future of the Group was reassuring and reserves considerable, the year's distribution of dividends would be less than in recent years, Col. Glover continued:

'The year under review has been one of frustration and retrenchment in the face of markets artificially diminished by restrictions and indirect taxation. The steps which have been taken to stabilise the economy of this country have operated to dislocate the domestic appliance industry to an extent which we can only feel is disproportionate to the burden borne by other sections of the community.

'The restrictions on selling that have been imposed on our industry, one after the other, have not been lifted, and the turnovers of your companies have suffered as a result. Under such conditions it is a difficult task to resolve where to draw the line; what expenditure is necessary and what can be eliminated.

'We have decided that our various programmes for the development of appliances should in no way be curtailed; rather the reverse, for this is the very life-blood of our future trading. Certain new appliances are already coming into production and others will follow, all of which should improve the sales position.'

Col. Glover then gave details of the activities of the various trading companies of the Group.

Group trading profit for the year ended December 31, 1956, after deducting all expenses, amounted to £176,197 (compared with £504,775 for the previous year) and, together with investment income, totalled £217,552 (£545,580). The net profit for the group for the year, after taxation, totalled £86,679 (£262,879).

The final Ordinary dividend recommended was 10d. per share, making 1s. for the year, and absorbing, with the Preference dividend of £1,869 (same) £71,031 (£96,966).

Imperial Continental

Profit of the Imperial Continental Gas Association for the year ended March 31, 1957, after all charges except taxation, amounts to £1,338,444 (£1,045,949); U.K. taxation takes £748,777 (£559,874). Proposed final ordinary dividend on £11.2 mill. capital is 6%, less tax, absorbing £386,400 (11%, less tax, £354,200, on £5.6 mill. capital), making 9%, less tax, £579,600 (15%, less tax, £483,000). Carry forward is £166,032 (£155,965).

Vent-Axia Ltd.

The Directors of Vent-Axia, Ltd., recommend a final dividend of 70%, absorbing £26,404 (65%, £24,518) less tax making with the interim of 30% (same) less tax a total distribution of 100%, £37,720, less tax, for the year ended March 31, 1957 (95%, £35,834). Group profit before taxation was £245,636 (£212,575), taxation took £132,902 (£111,902); carry forward is £12,930 (£12,008).

Thomas De La Rue & Co.

Trading surplus of Thomas De La Rue & Co., Ltd., for the year ended March 30, 1957, was £1,097,597 (against (£899,807 last time.) Profit for the year, after deduction of tax, was £504,212 (£319,303); tax took £677,666 (£592,342). Final ordinary dividend of 25% is recommended (20%) absorbing £133,112 (£106,490) and making 35% absorbing £186,357 (30%, £159,735).

Gibbons (Dudley) Ltd.

Net profit of Gibbons (Dudley), Ltd., for the year ended December 31, 1956, was £249,532 (against £181,191 in the previous year) the annual report reveals. Final ordinary dividend of 10½%, less tax, is recommended, making 15%, less tax (against 12%). Carry forward is £68,124 (£62,299) after payment of tax, £265,763 (£186,049).

FLASHBACK IN PICTURES

The Eastern Section of the Institution of Gas Engineers annual general meeting at Skegness (see last week's report)—a photograph taken at the reception. Left to right: Mrs. Wardell, Mr. R. C. Wardell, Councillor G. H. Edwards, Mr. J. Hunter-Rioch, Mr. R. S. Johnson, and Mr. Bernard Clarke.

Mr. C. H. Chester, right, Chairman of the South Western Gas Board, shows a coke burning appliance to Lord Mills, Minister of Power (centre), and Sir Percy Lister, Chairman, R. A. Lister & Co., Ltd., at the Bath and West Agricultural Show.

From a paper to the Eastern Section, I.G.E., Skegness, June 4

Application of Electricity in the Gas Industry

By R. HUTCHINSON,

DIVISIONAL ENGINEER, LEICESTER AND NORTHANTS DIVISION, EAST MIDLANDS GAS BOARD.

WITH the widespread adoption of bulk supply systems or grids, attention is being centred on the application of automatic control to this branch of distribution technology, which involves uncommon boosting and compressing plant and control equipment. When all the methods of automatic operation are examined, electrical methods are the only satisfactory way of achieving the comprehensive automatic control of gas equipment necessary to eliminate manpower. It is proposed to describe three typical installations associated with distribution. The first two relate to particular aspects of a grid, and the third to a local district medium pressure booster. The three installations are:

(a) A small holder station taking a bulk supply from a gas grid;
(b) a small reciprocating recompression installation for supplying reception stations some distance away; and
(c) a medium-sized rotary booster installation for supplying a local medium pressure mains network.

Adequate Peak Load Pressure

For a small holder station taking a bulk supply, the main items of gas plant consist of a volumetric governor, a station meter, a gasholder, a fan booster and a station governor. The fan booster is included in order to provide adequate peak load pressure when the gasholder is in its inner lift. To determine the size of the gas equipment, the gas loads are calculated from the assessment of the existing domestic, commercial and industrial loads, together with the respective potential developments in each, having regard to local authority development plans and similar information. The figures are evaluated for: (i) An initial condition of load (say, within 18-24 months of the design date); (ii) the future load (say, within 15-20 years); and (iii) the ultimate load.

Starting Torque

The equipment is designed on the future load condition (ii), but often the size of governor valves and similar control gear is less than that required for the future load to obtain satisfactory initial working. The gas booster is designed when economic to suit future loads, but run at a slower speed to suit the initial conditions. Provision is made for fitting different sized pulleys to suit the increased load at a later date. To determine in turn the size of the electric motor to suit this booster drive, consideration is given to the starting torque required by the booster and when the 'drive' has a high inertia the maker's WR^2 figure is obtained.

A typical small booster installation (described in an appendix to the paper) is fitted with a flame-proof motor, but the starting panel and safety gear are located in a non-danger area. Generally, electric motors having a speed of approximately 1,460 r.p.m are the most suitable electrically, both as regards efficiency and power factor. Whenever possible a starter of the direct-on type is used in which are incorporated thermal (not solenoid) overload features, and self-contained isolator and ammeter. The starter is fitted with a two-wire control circuit into which the starting time-switch and/or pressure switch and the various electrical safety gas pressure limit switches are wired. There is a danger in using automatic starters having local and remote features, and it is good practice to omit the local start/stop buttons with their associated hand/auto switch, as, under fault conditions, the change-over switch may have the effect of negating the safety switches, resulting perhaps in serious damage. The safety gas pressure switches are of the stay-put type and the switch circuits 'fail to safety.'

A diagram with the paper shows the arrangement of control gear associated with the volumetric governor whereby when the gasholder is, say, one plate from full (depending on the expansion margin) a trip switch energises a 12 volt flameproof magnetic pilot valve in the volumetric governor auxiliary system causing the volumetric governor to close. The switch breaks circuit to re-open the magnetic valve when the holder has fallen by, say, two plates. The power to operate the magnetic valve is normally derived from a single-phase A.C. supply through a transformer rectifier having a 12 volt D.C. output. Should the power supply fail, a changeover relay is included whereby a 12 volt battery is switched into the magnetic valve circuit, preventing the possibility of the holder blowing should it be full at a time of power failure. The 12 volt battery is kept charged by a trickle charger. A separate duplex switch is also fitted to the gasholder; one set of contacts arranged to sound an alarm bell when the holder inner lift is, say, 2 ft. only above the rest blocks, and the second set wired into the motor control circuit to stop the booster when the holder bell is, say, 1 ft. from grounding.

Safety Feature

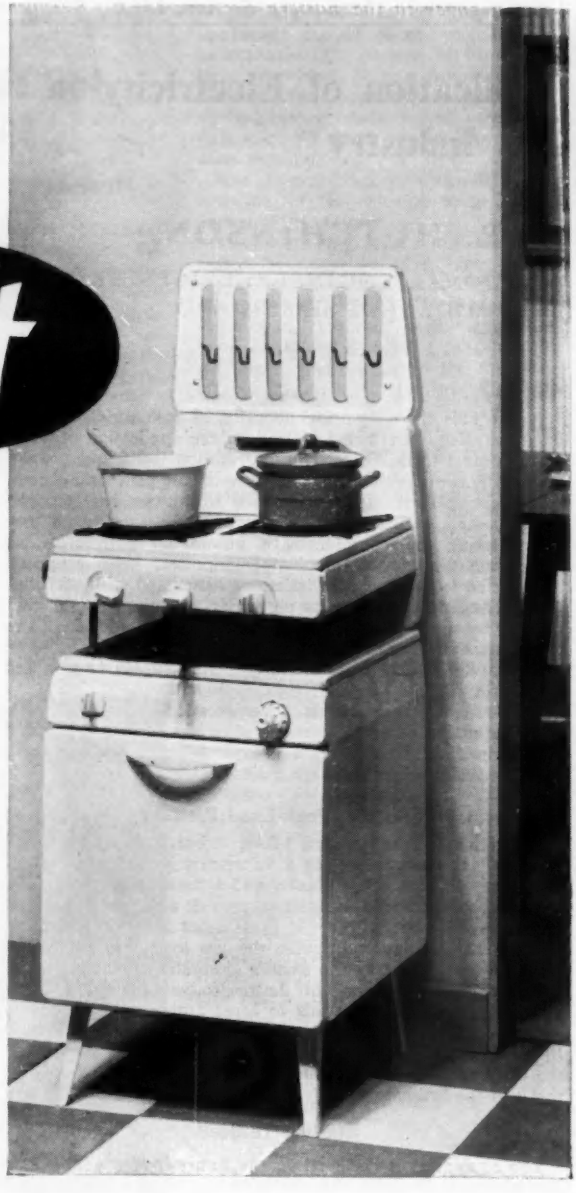
(A safety feature in connection with grid supplies generally was also shown in an appendix, whereby a pressure indicator having electrical contacts is incorporated so that should the grid pressure on the inlet side of the volumetric governor fall to, say, 2 lb. per sq. in., an alarm bell is energised.)

It is the general policy in the East Midlands area to incorporate on all vital electric drives, *i.e.*,—those on which the gas supply to the town or district depend, an earth leakage alarm system. This device indicates incipient fault conditions in the main electric supply due to the 'out of balance currents' which develop with a fault. Such a fault could blow the main fuses, causing an interruption to the town gas supply, and it invariably arises from some minor equipment such as an inspection hand-lamp lead which receives its current from the same source as the booster motor. This fault indication equipment, incidentally, does show current loss due to faulty wiring, which current is, of course, metered on the main meter.

A small reciprocating recompression installation (described in another appendix) supplies three small-sized towns situated some distance from the principal 'backbone' main. The pressure in the backbone main is insufficient to meet the most economic combination of load and pipe size, and the compressors simply augment the pressure in it. In this instance the main is 30 miles in total length, and comprises 23 miles of 6 in. and 7 miles of 4 in. pipe. Normally, the inlet pressure to these compressors varies between 4-8 lb. per sq. in., and the outlet pressure between 15-20 lb. per sq. in. The machines are designed for an eventual load which may require 30 lb. per sq. in.

In this application it is possible to arrange a good load factor on the compressors by using the gasholder storage capacity in the three towns, and the compressors do not have to handle directly the load imposed by the consumers. There are, how-

THE NEW WORLD Cadet



specially designed for

- ✻ The bed sitting room
- ✻ The flat
- ✻ The maisonette
- ✻ The small household

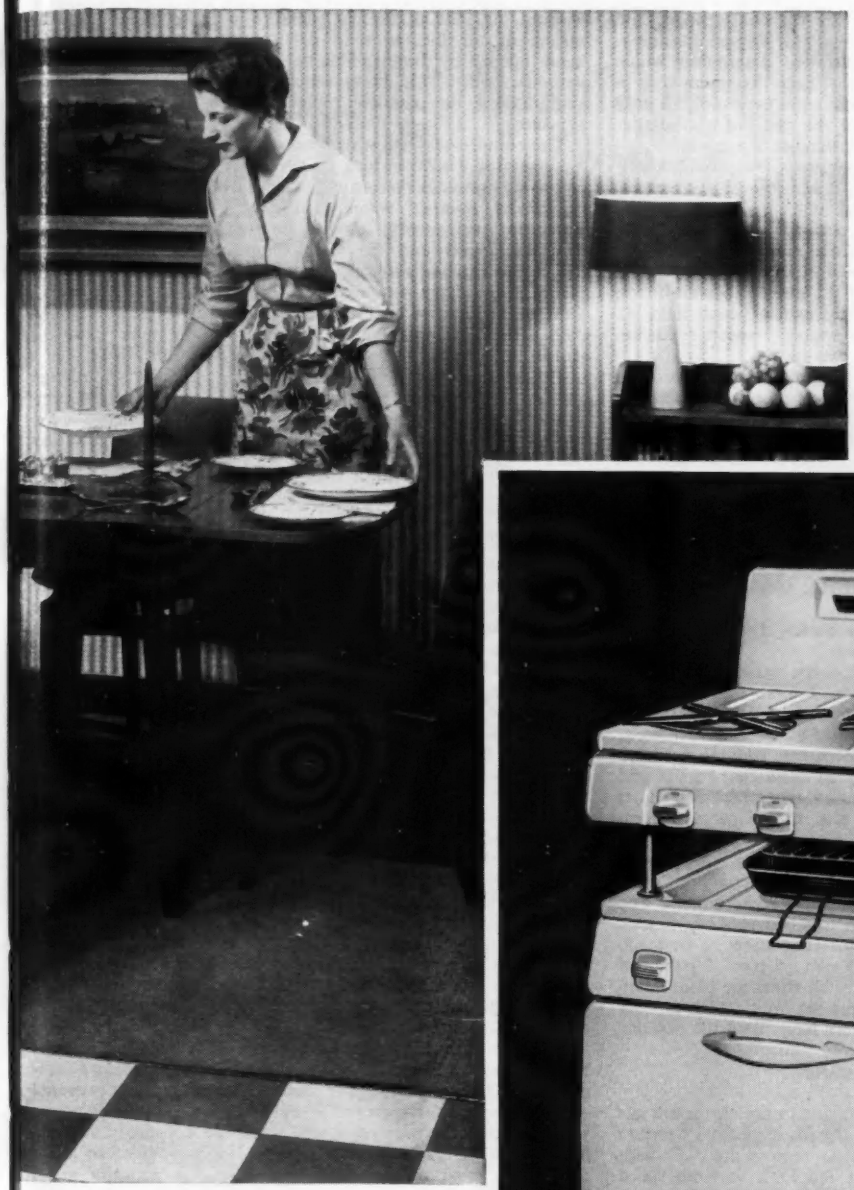
The **NEW WORLD** Cadet is intended primarily for 2 or 3 persons, but a whole meal for 4 can be cooked in the oven, and, when occasion arises, the Cadet will even cater for 6.

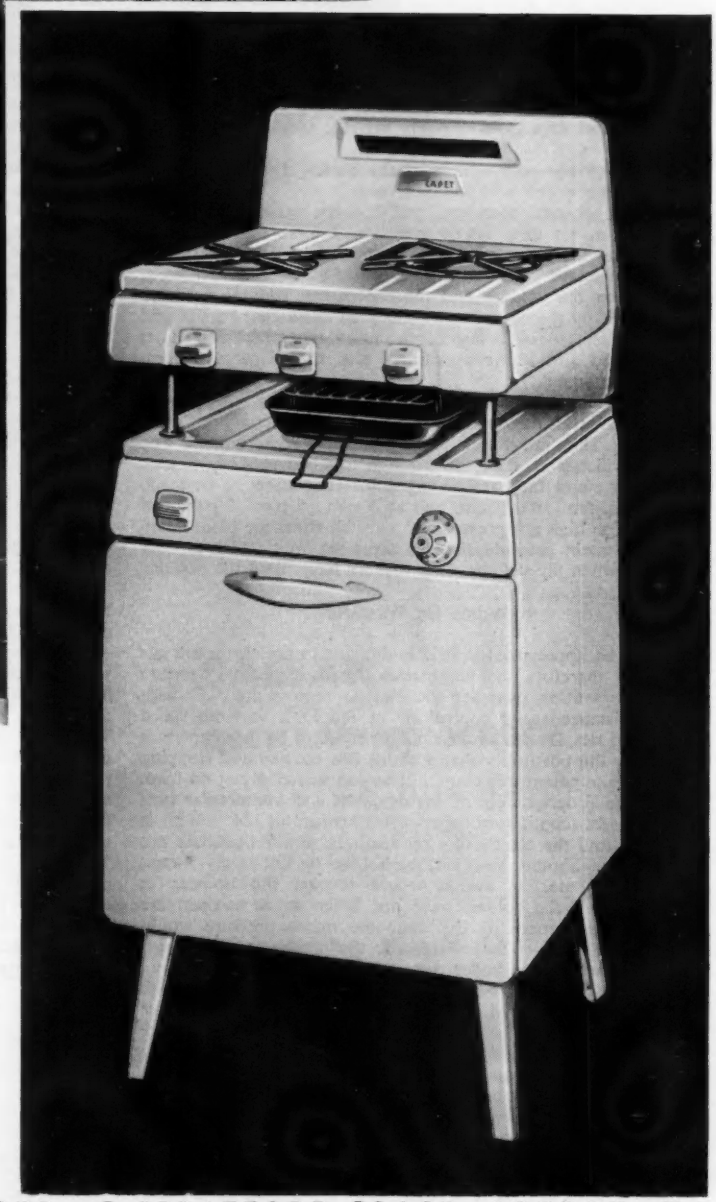
The width is only 19¼″ or 17½″ without gas match.

The Regulo controlled oven has a forward flue vent and a drop down door. The whole cooker has been designed for easy cleaning, and the oven has the new easy clean sides, and removable burner and burner box.

Available with or without platerack.

sell





NEW WORLD

PRODUCT OF Radiation Ltd.

RADIATION GROUP SALES LTD., 7 STRATFORD PLACE, LONDON, W.1

ever, the difficulties associated with the seasonal changes and week-end and holiday periods which call for special consideration as will be evident from the detailed description which follows. This compressing plant has been designed with a view to keeping to a minimum the total costs involved, not only those associated with the pumping of the gas, but also including the interest and capital depreciation of the plant.

Duplicate sets of piston-type compressors are provided, one to act as standby to the other, each driven through vee ropes by 70-35 H.P. change-pole medium voltage motors, giving 1,460/730 r.p.m. They are of the slip ring type and incorporate screen protected features. The motors are mounted outside the dangerous zone associated with the compressors, the drive being taken through gas-tight glands in wall-boxes. The motors are controlled by starting panels which have 12 constantly rated rotor resistances to enable a speed reduction of 20 to be obtained on each of the two speeds.

It is with a view to obtaining a good load factor that change-pole motors and rotor resistance speed control have been adopted, the two speeds of the motor catering for the winter and summer-time gas loads (the winter load is approximately twice that of the summer load) and the speed reduction features doing much to meet the inter-seasonal and week-end and holiday demands. The electrical losses associated with rotor resistance are comparatively high as a percentage of the total power and equivalent to the percentage speed reduction obtained, but the value of these losses is not sufficient to warrant the more expensive infinitely variable speed machines. In short:—

(i) The change-pole speeds of the motor, 1,460/730 r.p.m., cater for the winter and summer loads.

(ii) The seasonal week-end and holiday variations are met by the hand-set 20% speed variation available in the rotor resistances, the setting of which, though not automatic, is made as necessary by the resident sales and service representative when the volume and the consequent running speed to be handled by the compressors has been calculated by the grid control office. Apart from this attention, when recorder charts are changed and lubricators filled, etc., the plant runs completely unmanned.

(iii) The motor control panels are equipped with repeater time-switch starting gear and high gas pressure limit stop switches. The time-switch for starting has eight tappets, any one of which will start the machine up between say 5 a.m. and 9 p.m., and they are arranged for four starts to be made between 5 a.m. and 8 a.m. and at 3 p.m., 5 p.m., 7 p.m. and 9 p.m. The high gas pressure stop switch shuts the plant down when the main pressure rises to a pre-set limit which is only obtained when the volumetric governors have filled the holders.

Would Be Wasteful

It will be appreciated that it is difficult to anticipate the gas load and therefore the compressor speeds exactly to ensure 24-hour operation (whether the electric motors are A.C. with rotor resistance speed control or of the D.C. variable speed type), and despite the best estimates that can be made there is inevitably the possibility that without this starting and stopping electrical equipment this plant will be run wastefully at no load. With good programming of gas demands and compressor running speeds, continuous operation throughout 24 hours is obtained, and the start and stop features would therefore not be effective. Should, however, the holders be full at say 3 a.m., the repeater starting switch would re-start the booster at 5 a.m., and if the holders have not fallen so as to open the volumetric governors by this time the mains pressure would rise and the compressor switch stop the machines. This process may be repeated under certain conditions again at 7 a.m., and it could be that not until 9 a.m. is continuous running thereafter possible. Alternatively, the compressors may have run all through the early hours of the morning and day-time and have filled the holder at by say 6 p.m. due, say, to warmer weather than anticipated, but with the 9 p.m. starting tappet continuous running is restored and holder stock targets ensured by 6 a.m. the following morning.

In addition to these interesting control gear features, this plant incorporates an uncommon compressor starting and stopping equipment, whereby time delays incorporated in the motor starters operate a flame-proof magnetic valve in a relief valve auxiliary system which allows the machine to run up to speed without the load of the gas pressure in the cylinders, and by means of an inverse time delay relay the relief valve is again opened by the magnetic valve and the plant is shut down without load. This same relief valve also gives protection should there be excessive outlet pressure or inadequate inlet pressure.

The compressors are water jacketted, and the cooling system incorporates a temperature switch which operates in the stop circuit of the main motors as a safeguard against failure of the electrically pumped water circulating system. The cooling water is, incidentally, passed through the gas compressor cylinder jackets and the after-compression gas coolers, and the heat dissipated through a large water tank adjacent to the plant. Should the temperature in this tank exceed a pre-set limit, a temperature operated town water valve opens, whereby cold water displaces the warm water in the tank until the temperature level has been reduced to a safe limit.

Fundamentally, the medium sized rotary booster installation consists of two electric motor-driven positive type rotary compressors for supplying three districts—two of which require similar pressure schedules, but the third, due to a smaller gas main, requires extra pressure at the lunch-time peak period only.

Details Finalised

The installation is not yet working, but all the details have been finalised and the plant should go to work in the autumn of this year. The compressors and driving motors will not be housed. Apart from the peak load period, the three mains are fed by one booster driven by an A.C. commutator motor, the speed of which is infinitely variable over a 3:1 speed range by an induction regulator. The setting of the regulator is provided by a cam type controller which may be novel in this application.

Briefly, this controller is a simple on/off switch operated by a bellows type of gas pressure recorder. The setting of the switch, however, is varied by the movement derived from the contour of a perspex cam cut to the shape of the pressure record it is required to imitate. Attached to a second arm operated by the bellows of the pressure recorder is the ordinary recorder pen, so that a normal chart is obtained of the pressure given. With good working, the edge of the perspex cam and the ink line of the recorder are coincident. Like the auto governor associated with automatic station or district pressure governors, this controller can be fitted with a cam cut to suit the gradual variations in load required by the district supplied, and various cams may be used to suit the changing seasonal loads.

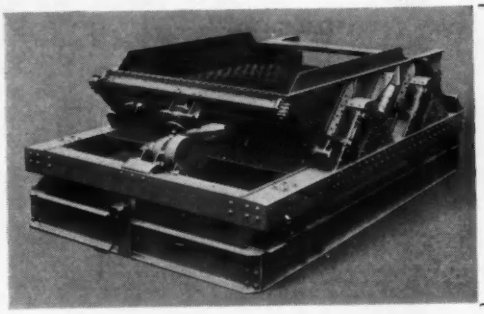
To meet the higher peak pressure of the third district referred to, and to save the high capital cost of a second commutator motor, a change-pole motor-driven booster is provided —since the load factor is poor—but to save some of the power which would otherwise be wasted when the booster capacity is higher than the gas demand a relief valve is provided to allow the higher pressure to relieve into the lower pressure main. When the change-pole motor is not running, the relief valve is wide open in order to provide the common pressure to the three mains. The change-pole motor-driven machine is started and stopped by a time-switch, but the change-speed switch is operated by a pressure switch to raise the speed and a differential (or volume) pressure switch to lower it. The two boosters are similar in size so that when a third machine is put down common standby capacities will be available. To ensure continuity of electric supply, a second main electric feeder cable will be installed, and either cable will meet the total power required. (The sequence of switching with a power failure was included in a diagram appendix to the paper. The change-pole motor installation is about half the cost of the variable speed installation.)

New Developments

There is now a new range of electric motors coming on to the market having ratings in accordance with B.S.S. 2613. These new machines have Class 'E' insulation, which is a synthetic product. The continuous rating temperature rise has been raised from 40°C. to 65°C. and motor makers are able thereby to uplift the power output from a given frame. There is a consequential reduction in price varying between

CORT OF READING

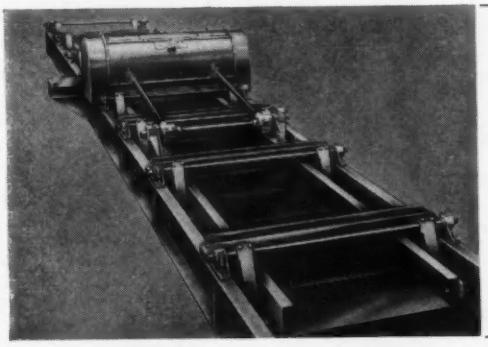
Manufacture a Screen to Solve any Bulk Grading or Separation Problem, Efficiently & Economically



CORT-KRUPP

RESONANCE SCREEN

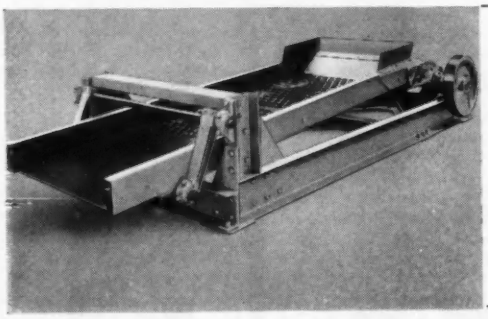
HIGH SPEED, HEAVY DUTY



SUPER-SPARTAN

RECIPROCATING SCREEN

MEDIUM SPEED, HEAVY DUTY



CAESAR

OSCILLATING SCREEN

SINGLE OR DOUBLE DECK

UNIVERSAL DUTY

Complete Mechanical Handling and Screening Plants Designed and manufactured

ROBERT CORT & Son Ltd

READING · ENGLAND

Telephone: Reading 55046 (5 lines) Telegrams: "Corts, Reading"

HANDLING PLANT
OF ALL TYPES
ROBERT DEMPSTER & SONS LTD.
ELLAND, YORKS.

about 12½%-15%. This increase in horse-power rating considerably reduces the over-load capacity, and greater care will be necessary in applications. To give some idea of this upgrading in power, the old 2½ H.P. motor frame will be lifted to 3 H.P. under the new specification.

There is a tendency for users to provide electric motors well above the horse-power absorbed in the drive, and the efficiency and power factor deteriorate badly in consequence. Apart from unnecessarily high first cost, power factor correction condensers must also be larger and more expensive when a drive is over-motored.

Large Constant Speed Motors

With the increase in demand for fairly large constant speed motors for catalytic oil gas plant air blowers and similar applications, there is much to be said for high voltage machines. Not only does current at high voltage attract a lower tariff charge, but the cost of power cable is considerably cheaper. As a rough guide, the following table gives some idea of these differences.

Horse power	Cost per 100 yards run 3-core cable		
	At 440 v.	2.2 kV.	6.6 kV.
150	£ 170	£ —	£ —
250	375	130	—
400	625	165	155

The approximate cost levels of squirrel-cage screen protected motors for various voltages is shown in the table below:—

Horse power	Motor cost			
	400 v.	2.2 kV.	3.3 kV.	6.6 kV.
150	£ 375	£ 650	£ 700	£ —
250	535	820	875	1,375
400	855	1,165	1,225	1,585

Usually direct-on motor starting features can be obtained from a high voltage supply, and this, too, considerably simplifies maintenance by the removal of brush troubles. The starting can often be arranged on a main switch, situated perhaps in the sub-station some distance away, and controlled by a pair of pilot wires from the motor position. Over-load, earth fault and single phasing protection is given by an instrument type of relay.

DISCUSSION

Mr. W. A. Evetts, Watford, said Mr. Hutchinson had confined his paper almost entirely to distribution problems, and these were very much to the fore today with the extension of integration systems and the closing down of many of the medium size and smaller gasworks.

The first example Mr. Hutchinson had described was the control of gas into and out of a small holder station. The controls were all operated electrically, even to the shutting of the volumetric governor when the holder was full. Mr. Evetts asked the author whether he had considered the quite simple mechanical cut-off device, but possibly in the example he had given the governor was some distance from the gasholder.

In this as in the other examples, the reliance was entirely on electrically driven machines and it appeared that the author had complete confidence in the ability of the electricity authority to maintain a supply at all times. 'Some of us are still hesitant,' added Mr. Evetts, 'and instal duplicate diesel-driven machines'!

A small point Mr. Evetts asked the author to enlarge upon was a note on a diagram (appendix 1 of the paper): 'The pressure switch to start the booster motor which comes into operation when the holder uncups.' Had the pressure already been lost before the booster started? It appeared that the switch to break contact and stop the booster motor operated when the pressure fell to 1 in. W.G.—this would almost appear to be past the '12th hour' and any failure to break contact would result in the holder crown being pulled in.

Mr. Evetts said he noticed there was an alarm bell on the installation, and presumably this was within the hearing of someone on the station.

The second example—the re-compressing installation—was interesting and contained, as the author had pointed out, some novel features. One would have liked to have had some information on the economics of this particular installation as generally re-compression, unless at very high pressures was not economic. Here again, two electrically-driven machines had been installed and the combination the author had described of the two-speed motor with rotor resistance speed control gave a high degree of flexibility.

It was interesting to note, said Mr. Evetts, that in all the examples the author had given automatic or time control had been introduced rather than any form of distant control. Was the former preferred because of economic reasons or on the score of reliability?

They all knew that distant control could be expensive and was not always justified and, further, that quite simple volumetric governors, hand controlled, could, with experience give adequate control of a holder station. On the other hand, where on a grid system calls for gas were likely to vary considerably, and where one wished to bring down gas stocks to meet these variations, distant control would appear to be the only satisfactory solution.

The relief valves enabling the compressor to run off load was ingenious. Again, in this installation, the author was relying completely on the electricity supply with no safeguard against failure.

The third example—'The booster station with un-housed units'—had enabled the author to display his ingenuity in his endeavour to obtain the most economical combination of plant. Mr. Evetts asked if the control equipment was to be housed.

Mr. R. Whiting, Ipswich, stated that he was particularly interested in the safety and flameproofing aspect of the installations described by Mr. Hutchinson and that he had noticed, with considerable interest, the siting of the large boosters and their motors in the open air. He wished, however, to ask a question on policy in these matters.

It was obvious that the room in which station governors, boosters, etc., might be housed, would be treated as a dangerous place and that all electrical apparatus therein would be flameproof to Buxton Certificate standards or intrinsically safe. He assumed, however, that many instruments and pieces of apparatus described, in which both gas and electricity were involved, would probably be housed in another room to which various small impulse pipes and services would be carried. He felt that it was unlikely that such instruments could be obtained in a flameproof form and yet, from his experience, he knew that it was possible for mishaps to occur with them.

He asked Mr. Hutchinson if, in fact, apparatus was used which was not either flameproof or intrinsically safe and, if so, where the line was drawn between the use of such apparatus and the normal flameproof equipment. Did he regard the instrument room as being a dangerous place?

Mr. S. H. Stokes, Scunthorpe, said that early in his paper Mr. Hutchinson had rightly emphasised the consideration given to the importance of a good power factor in the installation of his electric motors. He wondered whether a power factor correction was also considered to improve running costs. He was a little surprised to read that re-compression had been considered as high as 30 lb. per sq. in. One would have thought, said Mr. Stokes, that the introduction of a high-pressure gasholder using H.T. motors at an off-peak hours tariff would have been justifiable economically.

The author appeared to consider that the infinitely variable speed motor was too expensive to be used for any but medium sized rotary booster installations. Mr. Stokes asked whether other forms of speed variation had been considered, such as the hydraulic or magnetic coupling.

Mr. Stokes said that mention had been made of the flameproof magnetic unloading valve—an interesting and reliable feature in a modern compressor installation. On the other hand he saw that the author had incorporated a magnetic pilot valve operated volumetric governor. One was tempted to ask whether a greater reliance on mechanical devices might not have been

more appropriate. Mention had not been made of a gasholder sealing plate as a mechanical device to be used in conjunction with other alarms in the event of compression plant being in operation with gas stocks down to the minimum.

For the water cooling system for compressors, Mr. Stokes had observed that there was no mention of precautions to minimise possible damage by frost—should not a thermostatically controlled immersion heater have been introduced into the system?

The paper appeared to refer to semi-automatic manned stations. Mr. Stokes wished to know, in the event of maximum automation, what was to happen should an alarm go off at one of the receiving works.

Mr. J. W. Wilson, Lincoln, said that in determining the size of gas equipment (governors, etc.), for holder stations, the author had made the point that such equipment was designed on future load conditions, say, within 15-20 years, but often satisfactory initial working conditions could be obtained by smaller sized equipment during the period of load development. The advantages in this practice were that there was a great deal to be saved in capital expenditure, not only in the equipment, but also in the associated fittings. An analysis of the cost of any holder station layout would indicate that the cost of connections heavily outweighed that of the equipment.

Less Likely to Stick

A further advantage was that governor equipment, sized within the range of shorter-term future requirements, would work throughout the whole length of the valve spindle, so that the valves, spindle and diaphragm were less likely to stick, deposits were not allowed to build up and leathers remained more pliable.

Referring to the schematic diagram of the principal gas and electrical connections supplying bulk gas to small holder stations, Mr. Wilson said: 'I would have liked to have seen a safety governor fitted across the gas grid inlet to the outlet of the station governor, and set at a pressure of, say, 1 in. W.G. less than the station governor pressure setting.

'Such a governor would ensure a positive pressure on the town in the event of a complete failure of pressure within the station, and would cover the human error which we unfortunately experience in the logging of syphons and the wrong sequence of valve operation.'

Mr. D. W. Ault, Lincoln, said: In connection with Mr. Hutchinson's reply to Mr. Wilson on the subject of safety governors, while I do agree with Mr. Hutchinson that at times of peak demand it is unlikely that a pressure setting of, say, 3 in. W.G. on the safety governor will be sufficient to keep all appliances on the district safe, I would suggest that some positive pressure at the outlet station governor is preferable to no pressure at all. It is certainly desirable to develop a foolproof system of causing the safety governor setting to follow the station governor setting, but this will complicate what is, in fact, a last ditch safety device and care will have to be taken that any such complications do not detract from reliability. Until such refinements are available, I feel we should utilise straight forward safety governors with the outlet pressure set as high as permissible on the basis of half a loaf being better than no bread.

The question of whether to supply or omit hand to auto changeover switches on automatic installations is, I think, one of the unanswerable problems. I am in entire agreement with Mr. Hutchinson that they do introduce dangerous features by cutting out automatic safety devices, but they are extremely useful, if not essential, for maintenance purposes and appear to me to be vital if the automatic controls break down. A very similar argument applies to alarm cancellation devices. It could be most distracting for the station attendant to have a loud alarm bell going for a long period while he is trying to concentrate on looking for a fault and we have, therefore, in the Lincolnshire Division introduced the following system which I believe is fairly standard practice on many other installations.

An alarm cancellation button is provided which on being pressed shuts off the bell or hooter, but lights up a conspicuous red light. On rectification of the fault condition, the red light goes out and is replaced by a yellow light which stays on until the alarm bell is again placed in circuit by resetting the cancellation button. Since we do not provide on our unmanned or automatic stations more than one alarm bell which may be rung by any one of six or seven fault conditions including internal and external telephone calls where applicable, it is necessary, in any case, to provide a relay board for operating the bell and light circuits referred to above and there seems to be no reason why the hand to auto changeover switch should not be wired into the same system so that on switching over to hand control the warning yellow light is energised.

On the matter of telemetering installations, I feel that Mr. Hutchinson is 'trailing his coat.' For unmanned pumping or boosting stations, it is obvious that schedule or cam control of the booster or compressor speed is the only possible method at the moment. Due to seasonal and even day-to-day load fluctuations, it is obvious that the terminal pressure of the system cannot be provided accurately by either of these methods and in view of the lack of precision, it is essential that either the cam control or the pumping schedule be adjusted up to give a safe margin in hand at the terminal point.

Efficient Method

Where, however, the pumping station is manned, the telemetering back of the terminal pressure in the system to the pumping station is most useful providing an efficient method of speed control of the compressor is available. We have, at the moment, had only limited experience, running into a few months of such a system at Lincoln, but as was explained during the meeting at Boston we have found that whereas previously it was necessary to hold pressures in the region of 3-4 lb. per sq. in. at the terminal point of the Lincoln high pressure ring main, with the pressure at this point repeated adjacent to the ring main compressors, it is possible to control the speed of the machines by hand with very little difficulty so that the pressure at the terminal point remains steady between 1½-2 lb. per sq. in. We have little doubt that once we have established the reliability of the system by a more protracted period of running we can drop the terminal pressure still further with safety. There is, of course, no point in endeavouring to work to close limits of pressure unless, as pointed out by Mr. Hutchinson, the method of speed control on the prime movers is such that a power saving is available.

Mr. Hutchinson mentions an electricity loading of 100 kVA above which it is possible to obtain from the Electricity Board a high voltage tariff. I would draw your attention to the fact that practice appears to differ between various boards and whereas the East Midlands Electricity Board are prepared to put us on to a high voltage tariff at 100 kVA we have recently been refused a high voltage tariff by the Yorkshire Electricity Board for a loading estimated to be in the region of 300-400 kVA. On this installation, a figure of 500 kVA was mentioned as the minimum load for a high voltage supply and tariff. We were somewhat disturbed by this refusal because it was estimated that the extra annual cost of electricity which the Gas Board would have to meet by remaining on a low voltage tariff would be in the region of £500 per annum.

Mr. Ault continued: We have been carrying out recently an investigation into the point raised by Mr. Evetts on the use of pressure switches for bringing in the district booster on the uncupping of the gasholder. We have not yet concluded the investigation, but it is fairly obvious that the speed of fall of pressure in the inlet station governor main is a function of the following items: Holder size; district demand; grid main input; and size of mains; and, further, that the rate of rise of pressure due to the booster starting depends upon some of the former items and also on the size of booster.

Where the holder when fully inflated throws a pressure of, say, 1½-2 in. W.G. above the minimum pressure required by the district at peak load times and providing the holder is of reasonable size, I think it is probable that a pressure switch will have the booster speed up in time to prevent a kick down in pressure below the minimum line. Where, however, the margin of holder pressure above district pressure is small, for example, we have two stations where the holder when fully inflated throws only ½ in. above the district pressure required at peak load time; the setting of a pressure switch to start the booster would have to be extremely accurate and there is very little margin of time for the booster to reach its working speed. On such installations, I think that mechanical starting

Facts from the record

of Goodyear conveyor belting

STACKER

APPLICATIONS

A super quality belting for use where there is severe and frequent abrasion and flexing. It is ideal for conveying ores, stone, coke, glass cullet and other highly abrasive materials.

PHYSICAL PROPERTIES

Stacker exceeds British Standards Grade "A" in all requirements of fabric and rubber and may be used at temperatures up to 200 deg. F.
Made with the highest grade friction stock between plies for maximum flex-life.
Has the toughest cover obtainable, with the highest possible resistance to cutting, gouging and abrasion.
Completely inhibited against mildew damage.

AVAILABLE

Stacker is available in 28, 32, 36, 42 and 48 oz. duck weights, from 3 to 9 plies and in a full range of widths, lengths and cover gauges.

STYLE ORS

APPLICATIONS

For operations where extreme resistance to oil is necessary. Especially suitable for carrying oil-sprayed coal, meat, fish or food where an

PHYSICAL PROPE

STYLE HRS

APPLICATIONS

Specially made for conveying hot, highly abrasive materials when the combination of resistance to high temperatures, extreme abrasion and severe flexing are essential.

PHYSICAL PROPERTIES

The carcass, cover and skim-coating between plies give all the heavy-duty characteristics of a Grade "A"

GOODYEAR
INDUSTRIAL RUBBER PRODUCTS

CONVEYOR BELTING · TRANSMISSION BELTING · V-BELTS · HOSE · FENDERING

of the booster from a holder trip switch set to operate perhaps half a plate before the uncupping point will be essential.

The following is a summary of **Mr. Hutchinson's** replies to the contributors to the discussion: He said: 'In reply to Mr. Evetts' first point, I have given consideration to mechanical holder cut-off devices, but feel these are prone to give more trouble than the pilot valve type included in my first diagram. The holder cut-off valve, although worked electrically, does fail to safety in so much as in the event of an interruption in the electricity supply the pilot automatic holder valve would re-open the volumetric governor. So far as the pressure switches are concerned, I have never found the delay associated with them has in any way jeopardised the town supply. The pressure fall as the holder uncups is comparatively slow as compared with the instantaneous start given by the pressure switch, and there is no need in my experience to anticipate this fall in pressure by an independent mechanical switch. The safety switch which stops the booster when the holder is, say, 12 in. from the rest blocks is, of course, an emergency switch; a holder crown would not be pulled in with this margin.'

Remote Control Avoided

Remote control of the compressors described in the third diagram had been avoided, not only because it was more expensive, but because complete reliance would be placed on the G.P.O. lines necessary with tele-control gear, and on an installation meeting the conditions described in the paper it would not be easily possible to provide a steady input to the station by any such equipment. Telemetering really only came into its own when the compressor station was manned, but in this particular installation the size of the unit did not warrant the full-time attendance that otherwise would be necessary.

The relief valves referred to by Mr. Evetts did not rely on an electricity supply so far as the safety features were concerned. These relief valves met three separate and distinct functions:

(1) To open when there was an excessive outlet pressure, and thereby allow the excess pressure to flow back to the inlet main;

(2) to open in the event of a low inlet pressure and allow the outlet pressure to prevent a further fall in the inlet pressure; and

(3) to open while the compressors start up and shut down to take the load off the compressors and main driving motors —this specific duty was the only one electrically operated.

The control equipment referred to in the fourth diagram would be housed, but since the components were small this presented no problem.

'In reply to Mr. Whiting's points, there is now a satisfactory solution to the point he raised with regard to gas equipment incorporating electrical gear,' said Mr. Hutchinson, 'and Mr. Battersby, whom I see here today, could elaborate on this point as the Chairman of the Institution Safety Rules Committee. I do not regard the instrument room as a dangerous zone.'

In reply to Mr. Stokes' points, high pressure holders had been briefly considered as an alternative to the recompression plant, but both the capital and running costs were considerably higher than the charges associated with the installation described in the paper.

With regard to speed variation, hydraulic couplings were not, of course, as efficient as change-pole motors.

If mention had been omitted regarding gasholder sealing plates in connection with diagram 1, it was not intentional. All holders in the East Midlands Board's area either had sealing plates already fitted to them or would be fitted with sealing plates as soon as the opportunity to do so occurred. The question of sealing plates did not, of course, arise in connection with the compressor installation described in appendix III, as the gas aspirated by the compressors was taken direct from the grid main and not from a holder.

The point with regard to frost damage did not arise on the installation referred to, as the machines were running virtually constantly, and during frosty weather would certainly be running full-time. In the event of an alarm sounding (*i.e.*, due to low grid gas pressure) during the time when the resident fitter was not within ear-shot it was found that the fitter's wife would hear it, and if the low pressure conditions applied generally throughout a grid main section the alarms at all stations affected would sound, and the chances of no one hearing them would be remote. An occasion had occurred when three stations were affected, and the attendants at two of the three rang in to the central grid control office almost simultaneously giving notice of low grid main pressure.

In reply to Mr. Wilson's point, the connections were, of course, the same size as the mains which the equipment fed. Where governors, however, were installed for the initial conditions it was possible to fit taper pieces and to instal the main tees on the principal mains on the same centres as would be necessary for the larger governor. This was achieved by fixing a small double flanged making-up piece on the inlet or outlet of the governor in order that the equipment could be modified simply in the future. 'So far as the safety governor is concerned,' went on Mr. Hutchinson, 'these are very doubtful assets, and Mr. Wilson will readily appreciate that for a safety governor to be effective throughout the day it would be necessary for it to open, say, 1 in. less than the various station governor settings.'

It was not sufficient for the governor to open, say, 1 in. less than the minimum pressure of, say, 3 in. W.G., as during the peak time period this would be quite inadequate to safeguard the district. At peak periods pressures as high as 7 in. or 8 in. W.G. were common, and the safety governor to safeguard the pressure at this time should open at, say, 6 in. or 7 in. W.G. The author was unaware of any automatic device which varied the loading on the safety governor which was effective.

'With regard to Mr. Ault's point on safety governors, I would agree that a safety governor set at, say, 3 in. W.G. is better than nothing at all, but, as mentioned in the reply to Mr. Wilson, it is not really satisfactory unless it safeguards the peak pressure condition when the station governor outlet might be 7 in. or 8 in. W.G. I would not agree with Mr. Ault that hand/auto switches are necessary for maintenance purposes, as the risk of putting the switch into the "hand" position and thereby negating the safety switch could have serious consequences. If an alarm bell were introduced to the circuit, the noise of which was disturbing to the attendant correcting the fault, it would always be possible for the wire to be disconnected from the bell temporarily, but this, of course, should not be carried out by any other than an authorised person, lest the wire is not re-connected.'

Mr. Hutchinson said: 'The point with regard to telemetering was not really relevant in the context to which it was referred, since both the compressing stations and the grid reception stations are not "manned." Telemetering equipment for compressors was not without its troubles even on manned stations, and, as Mr. Ault will know, there is considerable risk of "hunting" taking place due to the spring-like effect of the gas in the main between the control point and the compressor.'

The cost of the hire charges for telephone lines was very considerable, he said, and the system based on TIM as used by the G.P.O. for time checks had much to recommend it. The application devolved around an automatic device worked from a record, and, when the unmanned station was called on the telephone the appropritae pressure equipment stated '1.75 lb. per sq. in.' or whatever pressure happened to be prevailing. In this way line hire was avoided. The limitation to 300 or 400 kVA for a high voltage supply was unreasonable on the part of the electricity supply authority, and no doubt the point would be noted by the representative of the Ministry of Power present in the audience.

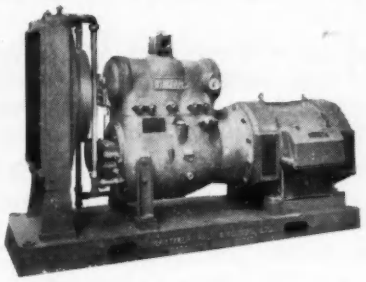
Concerning Mr. Ault's points with regard to pressure switches, he could not agree that the delay associated with the switch was likely to cause failure of pressure on the district, and if on some particular installation the holder uncupped so quickly that it was not possible to start the booster in time, then obviously the safest way was to instal a time switch. Mechanical switching of boosters from holder trip switches was to be deprecated as this could waste power. For instance, a holder could be in an outer lift throwing sufficient pressure to meet the district demand and yet the booster would be running because the holder was not quite high enough to trip the 'stop' switch.

New Large Hydrovane Compressors Now Going into Production

DURING the past five years Whittaker, Hall & Co., Ltd., in collaboration with Alfred Bullows & Sons Ltd., have developed the larger sizes of Hydrovane compressors and have recently announced a range up to 600 CFM which is going into production.

The Whittaker Hall 600 CFM Hydrovane has been designed primarily as a stationary unit direct coupled to a flanged motor; a 210 CFM size (see illustration) has self-contained radiator and fan; and a 65 CFM size is mounted on an air receiver. They are completely air cooled and self contained and, being flange connected to the motors, do not require any further alignment after mounting on simple foundations.

The larger Hydrovane compressors comprise two stages of compression, each with its own pressure lubrication and cooling system acting also as the sealing medium. There are no circulating pumps or valves and, being designed as a complete unit, they are free from any external pipework or accessories.



Negligible Wear

Oil separation is in three stages with full-flow filtering and the discharged air is virtually oil free at temperatures lower than previously obtained from any other types of compressor. There are fewer moving parts and wear is negligible due to the copious supplies of oil. The oil circuits are self draining and damage due to oil locks is not possible.

Volume control is by means of a modulating suction valve enabling the compressor to be regulated without the use of large receiver capacity and the starting characteristics are such that squirrel cage motors can be used with star delta starting.

The Whittaker Hall Hydrovane compressors complete the range of smaller machines made by Alfred Bullows and Sons Ltd., and, together with the portable designs of the Hymatic Engineering Co., Ltd., and larger portables made by the Burtonwood Engineering Co., Ltd., enable the Hydrovane compressor to meet all requirements for compressed air in the most advanced and proved form of oil flooded rotary compressor.—*Whittaker, Hall & Co., Ltd., Radcliffe, Manchester.*

TRADE NEWS SUPPLEMENT

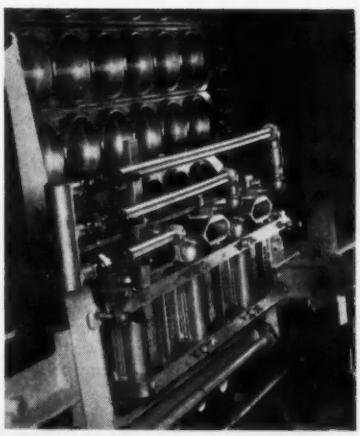
Gas Used for Crumpet Making 'Down Under'

PICTURED here is a gas-operated machine recently designed for a century-old Australian firm of crumpet manufacturers at Richmond (Victoria) and constructed by C. L. de Jersey & Sons, Moorabbin (Victoria).

It is based on a continuous linked hot-plate belt and a separate series of rings to form the crumpets. At the outset, each line of rings is automatically greased with cooking oil and the mesh then drops on to a linked hot-plate-belt to move under a hopper. Again automatically, the depositors eject the required amount of crumpet mixture into the line of rings.

At this point gas begins its rôle. The machine is divided into three separately-controlled heat zones; the first and second zones consist of ten drilled pipe burners each under the hot plates, while the third has 12 burners.

Schwank burners are used and were



supplied by Siaps Gas Radiants, Ltd.—*Siaps Gas Radiants, Ltd., 436, Grand Buildings, Trafalgar Square, London, W.C.2.*

NEW STYLE SMOKELESS FUEL FIRE

INCLUDED in a display of smokeless fuel appliances at Falkirk gas showrooms was a new style of open fire which attracted considerable interest. The fire, the Caloray, was part of a display provided by Lane & Girvan, Ltd., ironfounders, Bonnybridge.

The fireplace is a complete departure from traditional lines. The aim of the designer has been to make an open fire which stands out completely from the wall. This has been achieved by suspending the firebox between tubular legs, which give the unit a contemporary look.

When left unattended a close mesh screen can be pulled down over the fire opening, which leaves the fire visible but makes an effective fireguard. Operation is simple, the removal of ash being handled without the usual spillage. On gas coke the unit is claimed to burn for about 18 hours without stoking.

Because of its design the fire gives off heat on all six sides, and by standing out from the wall it gives its heat more effectively than the traditional fire which is built into the wall.—*Lane & Girvan, Ltd., Bonnybridge, Stirling.*

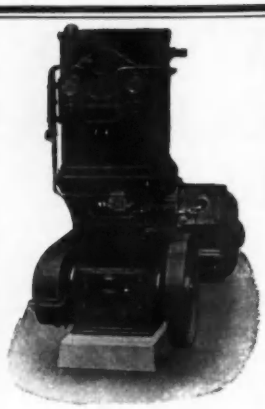
New 'Ideal' Means of Ensuring Joint Strength

IN heating, plumbing or gas pipe-lines, the strongest joints are secured by Ideal Full-way fittings, claim the makers, Ideal Boilers & Radiators, Ltd.

A new and improved process has been developed by this Company, for coating inside the full length of the sockets with a metal which has approximately the same melting point as solder. This renders the securing of perfect joints a simple and speedy operation.

Ideal Full-way fittings are ready for immediate use—no cleaning is necessary and no time is wasted by having to scour with steel wool on the inside to prepare them for solder. The internal diameter of the fitting is the same as that of the tube which seats flush against the shoulder of the fitting, ensuring a uniform bore throughout and providing unrestricted flow.

Ideal Full-way fittings are interchangeable and are manufactured for use with British light gauge copper tube. They are unaffected by extreme temperatures and the joints are actually stronger than the tube itself.—*Ideal Boilers & Radiators, Ltd., Ideal Works, Hull.*

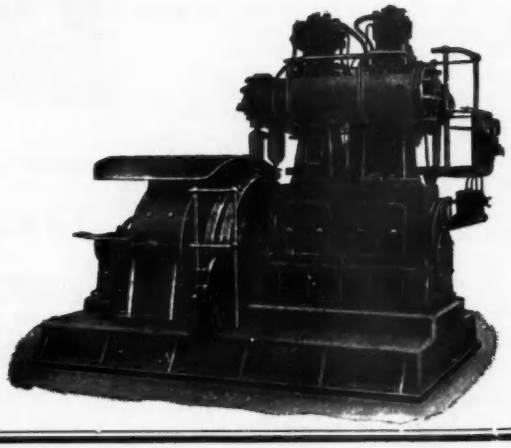


HIGH PRESSURE GAS COMPRESSORS *for*

pressures up to 5,000 lbs. per sq. in.

The illustrations show two high pressure gas compressors. As specialists in the design and manufacture of compressors for both air and gases, we make compressors for a wide range of capacity and pressure up to 5000 lbs. per sq. inch.

The compressor shown above has a capacity of 25 cu. ft. of free hydrogen per minute compressed to 3000 lbs./sq. inch. The illustration on the right shows a four-stage compressor with a delivered capacity of 200 cu. ft. of free town's gas per minute compressed to 5000 lbs. per sq. inch.



For full information regarding gas compressors, write, giving particulars of the duty required, to—

REAVELL & CO., LTD.

RANELAGH WORKS, IPSWICH

Telegrams: "REAVELL, IPSWICH." Phone Nos. 2124 & 2125

PASS
GAS AND WATER ENGINEERS

Central Action

DRILL STANDS

We manufacture a range of Central Action Drill Stands to Drill and Tap holes from ½ in. to 5 in. B.S.P. thread on live gas and dead water mains and which are equally suited for use on cast iron—steel or asbestos-cement pipes.

DRILLS & TAPS

Drills and taps are manufactured from material of the highest quality and are so designed to ensure that a perfect thread form is produced and that the taps are free cutting and easy to operate. Illustrations show combined twist drill and tap, and duplicate cup drill and tap.

Write today for full details of the range, simple operating instructions, prices and delivery.

E. PASS & CO. LTD · DENTON · MANCHESTER

Telephone: DENton 3001/2/3 · Grams: Tools Denton Manchester

Specialists IN UNDERPRESSURE ENGINEERING

dm PA 67

PUBLISHERS' NOTICE

The " Gas Journal " is published every Wednesday, price 1/6d.; by post 1/8d.

Subscription Rates:—65/- per annum; (Payable in advance.) A copy of the " Gas Journal " Calendar & Directory is presented each year to continuous subscribers.

Classified Advertisements: All small classified advertisements are charged at 2/6 per line (approx. 7 words)—minimum charge 10/-. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

Displayed Advertisements: Rates obtainable on application to the Business Manager. Change of copy for displayed spaces must be received 14 days prior to publication if proofs are required. Type area of inside pages 10 in. deep × 7 in. wide; block screen 120.

BUSINESS MANAGER: S. T. CULLEN

NORTHERN MANAGER: Philip W. B. King, Flat 1, 7 Langcliffe Avenue, Harrogate. *Telephone:* Harrogate 67625.

SOUTHERN & MIDLANDS REPRESENTATIVE: A. Engelhardt, T.D., 11, Bolt Court, Fleet Street, E.C.4. *Telephone:* Fleet Street 2236-7.

WALTER KING, LTD., 11, Bolt Court, Fleet Street, London, E.C.4.

Telephone: FLEet Street 2236-7. *Telegrams:* Gasking, Fleet, London.

OXIDE

DUTCH AND DANISH BOG ORE SPECIALLY ACTIVATED OXIDE OF IRON

Oxide supplied on loan or sale outright.
Highest prices paid for Spent Oxide.

Send your enquiries to

GAS PURIFICATION LIMITED

PALMERSTON HOUSE, BISHOPSGATE, LONDON, E.C.2.

Telegrams: "Purification, Stock, London" Telephone: London Wall 7938/9 & 7930

BUFFALO INJECTORS

Class A

For hot or cold feed water and steam pressures up to 200 lbs.

SEND FOR LIST

GREEN & BOULDING, LTD.
162a Dalston Lane,
LONDON, E.8

The
LIMIT OF EFFICIENCY
CAN BE REACHED
by the use of
LUX
GAS PURIFYING MATERIAL

Sole Importers:
HARRISONS (London) LIMITED
66, Mark Lane, LONDON, E.C.3
Telegrams: Birchrock, London *Telephone:* ROYal 3120

"KLEENOFF" *
THE COOKER CLEANER

"KLEENOFF"
FIBRE BRUSHES
RUBBER MOPS

"KAY-DEE" *
KETTLE DESCALER

for resale to the public and in bulk for works use

BALE & CHURCH, LTD.
CROMPTON WAY, CRAWLEY, SUSSEX

PLANT &c. FOR SALE

NEW AND RECONDITIONED SQUIRREL CAGE MOTORS

H.P.	Make	Enclosure	R.P.M.
40	Laurence Scott	Totally enc.	940
40	Metro-Vick	Ventilated	975
35	Brooks	Totally enc.	1,500
30	Metro-Vick	Screen Prot.	1,450
30	G.E.C.	Screen Prot.	720
28	L.D.C.	Screen Prot.	720
28/14	L.D.C.	Screen Prot.	720/360
25	Laurence Scott	Totally enc.	960
22	L.D.C.	Screen Prot.	720
22/11	L.D.C.	Screen Prot.	720/360
20	L.D.C.	Screen Prot.	1,460
20	L.D.C.	Screen Prot.	1,450
20	Wright	Screen Prot.	1,440
20	L.D.C.	Screen Prot.	1,440
20	Brooks	Screen Prot.	750
19	E.E.C	Totally enc.	1,460
18	Brooks	Totally enc.	1,430
15	Brooks	Totally enc.	955
12½	Brooks	Totally enc.	1,440
12	Crompton Parkinson	Screen Prot.	725
10	Brooks	Totally enc.	960
10	L.D.C.	Screen Prot.	720
10	E.E.C.	Screen Prot.	570/720
8	Brooks	Totally enc.	1,440
5	Metro-Vick	Totally enc.	2,920
5	E.E.C.	Totally enc.	1,460
4.5	Metro-Vick	F.L.P.	976
4	E.E.C.	Screen Prot.	1,450
3	Brooks	Totally enc.	3,000
3	Laurence Scott	Screen Prot.	2,900
2½	Brooks	Totally enc.	1,410
1.75	Brooks	Totally enc.	1,440
1.25	Brooks	Totally enc.	1,440
1	Brooks	Totally enc.	720

4—5/.75 h.p. A.C. Commutator Motors by Metro-Vick, 440 volts, 1,750/145 r.p.m. Ball Bearing with starters.

Also available a large selection of Slip Ring Motors and Miscellaneous Electrical Equipment.
For full particulars apply:

JAMES N. CONNELL, LIMITED,
Union Works,
Coatbridge,
Scotland.

Telephone: COATBRIDGE 1121 (7 lines).

FOR SALE.—Unused Audco Lubricated Valves, send for lists. Cleckheaton Engineering Co., Ltd., Cleckheaton, Yorks. Phone 397.

SPECIAL OFFER: Large quantity of new cast iron fullway valves, all iron parts, 8 in., 10 in., 12 in. and 14 in. for sale. The Midland Iron & Hardware Co. (Cradley Heath) Ltd., Cradley Heath, Staffs. Tel.: Cradley Heath 6264 and 5.

APPOINTMENTS VACANT

ENGINEER familiar with the gas and/or coke-oven industry and works practice, who can write clear and concise English, required as assistant to the editor of a monthly technical journal. No. 323, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

SCOTTISH GAS BOARD

GLASGOW & WESTERN DIVISION
PRODUCTION AND TECHNICAL SERVICES
DISTRIBUTION AND CONSUMER SERVICE ENGINEER
MOTHERWELL DISTRICT

APPLICATIONS are invited for the post of Distribution and Consumer Service Engineer in the Motherwell District.

Applicants should possess the Higher Grade Certificate in Gas Supply or equivalent qualification.

The appointment will be within the Scale (Provincial ' A ') Grade A.P.T. 8 (£745-£825) with placing therein according to qualifications and experience.

The post is pensionable and the successful applicant will be required to pass a medical examination.

Applications marked DE. stating age and giving particulars of education, training, experience and qualifications should be addressed to the Personnel Officer, 9, George Square, Glasgow, C.2, within 14 days of the appearance of this advertisement.

SCOTTISH GAS BOARD

GLASGOW & WESTERN DIVISION
PRODUCTION AND TECHNICAL SERVICES
ASSISTANT ARCHITECTS
DIVISIONAL HEADQUARTERS STAFF

APPLICATIONS are invited for posts as Assistant Architects in the Department of Production and Technical Services.

Applicants should possess reasonable industrial and commercial architectural experience, A.R.I.B.A. an advantage.

The appointments will be within the Scale (Provincial ' A ') Grade A.P.T. 7/8 (£705-£825), with placing therein according to age and experience.

The post is pensionable and the successful applicant will be required to pass a medical examination.

Applications marked A.A. stating age and giving particulars of education, training, experience and qualifications should be addressed to the Personnel Officer, 9, George Square, Glasgow, C.2, within 14 days of the appearance of this advertisement.

(*Classified advertisements continued on page* 708)

APPOINTMENTS VACANT *(ctd.)*

SCOTTISH GAS BOARD

GLASGOW & WESTERN DIVISION
PRODUCTION AND TECHNICAL SERVICES
MECHANICAL ENGINEERING DRAUGHTSMEN

APPLICATIONS are invited from suitably qualified persons for posts as Mechanical Engineering Draughtsmen at Head Office, Glasgow and Uddingston.

The appointment will be within Scale (Provincial 'A') Grade A.P.T. 6/7 (£640-£785), with placing therein according to qualification and experience.

The post is pensionable and the successful applicant will be required to pass a medical examination.

Applications marked ME/D, stating age and giving particulars of education, training, experience and qualifications should be addressed to the Personnel Officer, 9, George Square, Glasgow, C.2, within 14 days of the appearance of this advertisement.

GLOVER AND MAIN, LIMITED

GLOVER AND MAIN, LIMITED, gas meter and appliance manufacturers, invite applications for the position of MANAGER of their Dublin Branch. The responsibilities will include the sales of gas meters and may be extended to include the Sales representation of certain of the constituent companies of the Group throughout the whole of Eire.

Candidates, who should not be more than 40 years of age must be of good education and there are excellent prospects for a man of initiative and energy.

The commencing salary will not be less than £900 per annum and the successful applicant shall satisfy the Company's medical requirements, while residence in or near Dublin will be necessary.

Applications should be submitted to the undersigned not later than Monday, July 15, 1957.

A. J. Newson,
Secretary.

Glover and Main, Limited,
48, Grosvenor Gardens,
London, S.W.1.

EAST MIDLANDS GAS BOARD

NOTTS. & DERBY DIVISION
SENIOR TECHNICAL ASSISTANT (DISTRIBUTION) DERBY DISTRICT

APPLICATIONS are invited for the position of SENIOR TECHNICAL ASSISTANT (Distribution) in the Derby District.

Applicants must at least hold the ordinary grade certificate in Gas Engineering (Supply), should have a thorough knowledge of modern methods of distribution including high and low pressure systems and be capable of carrying out the detail work in connection with the planning and estimating of new work.

The commencing salary will be within Grade A.P.T. 7 (£705/£785) of the National Salary Scales, dependent on age, qualifications and experience.

The position is pensionable and the successful applicant will be required to pass a medical examination.

Applications stating age and giving full details of education, qualifications and experience together with the names of two referees should be addressed to the undersigned not later than June 26, 1957.

K. L. Pearce,
Divisional General Manager.

East Midlands Gas Board,
Notts. & Derby Division,
P.O. Box No. 62,
Friar Gate,
Derby.

EAST MIDLANDS GAS BOARD

NOTTS. & DERBY DIVISION
INDUSTRIAL GAS ENGINEER—CHESTERFIELD/MANSFIELD DISTRICT

APPLICATIONS are invited for the above appoint- ment located at Chesterfield in the Notts. and Derby Division.

Applicants should possess either a degree in Science, Engineering or Fuel Technology or alternatively should have passed the Associate Membership Examination of the Institution of Gas Engineers or an equivalent professional qualification. They should have had experience in the design, construction and installation of gas-fired industrial and commercial plant.

The successful applicant will be responsible to the Divisional Industrial Gas Engineer for the development of industrial gas sales in the Chesterfield and Mansfield Districts.

The commencing salary will be within Grade A.P.T. 10 (£860/£960) and the initial placing on the scale will be according to experience and qualifications.

The position is pensionable and the successful applicant will be required to pass a medical examination.

Applications stating age, experience and qualifications, together with the names of two referees, should be addressed to the undersigned to arrive not later than June 29, 1957.

K. L. Pearce,
Divisional General Manager.

East Midlands Gas Board,
Notts. & Derby Division,
P.O. Box No. 62,
Friar Gate,
Derby.

WALES GAS BOARD

APPOINTMENT OF DISTRIBUTION ENGINEER —SWANSEA UNDERTAKING

APPLICATIONS are invited from suitably qualified persons for the above appointment for which the salary will be within Grade 12 A.P.T. Provincial 'A' (£945-£1,070) commencing at a figure commensurate with qualifications and experience. The post is pensionable.

Experience in Modern High/Low Pressure Gas Distribution Practice is necessary, including mainlaying, planning, and complete control of the mains, services, fittings and meter repair departments of the Undertaking. The person appointed will also be required to carry out Group Advisory Distribution duties.

The position is one of responsibility with a rapidly developing Undertaking in a coastal town; there are continuously expanding industrial and domestic gas loads; the town has a completely re-built modern shopping centre, extensive residential areas and holiday bays located within a few miles of the town centre.

Preference will be given to applicants with qualifications in Gas Engineering (Supply) or similar appropriate qualification, and with suitable experience in Gas Distribution Practice.

The successful applicant will be required to pass a medical examination.

Housing accommodation at a reasonable rental will be available if required.

Applications stating age, experience, professional qualifications, education and particulars of training, together with the names of two referees, should be received by the undersigned not later than Wednesday, June 26, 1957.

A. Pickard, M.Inst.Gas.E., M.I.I.A.,
General Manager and Engineer.

Gas Offices,
Kingsway,
Swansea.

SOUTHERN GAS BOARD

PRODUCTION ENGINEER

APPLICATIONS are invited for the position of PRODUCTION ENGINEER to the Board. The successful candidate will be responsible to the Chief Engineer for the co-ordination of the production of gas throughout the Area and would be required to assist him in planning schemes for installing new gas-making and ancillary plant.

The post will be based on Southampton and it would be appropriate for the Production Engineer to live in the vicinity.

The salary will be by arrangement, but not less than £2,500 per annum. The successful candidate will be required to pass a medical examination and unless already subject to a pension scheme by virtue of the Gas (Pension Rights) Regulations, 1950, will be required to join the Board's Staff Pension Scheme.

Applications must be on the form provided which may be obtained from the Personnel Manager of the Southern Gas Board, 164, Above Bar, Southampton; forms should be returned to him in an envelope marked "Production Engineer" not later than July 15, 1957.

P. Valon Bennett.
Personnel Manager.

DOMESTIC UTILIZATION OF GAS

Norman S. Smith and
R. N. Le Fevre

For those on the 'Supply' side and Students of the courses which comprise the Gas Education Scheme.

Crown 4to - 138 pages
155 diagrams

Price **20/-** *inc. postage*

★

WALTER KING LTD.,
11, Bolt Court, Fleet Street,
London, E.C.4.

WALTER KING SERVICES—3

KING'S MANUAL OF GAS MANUFACTURE

Now being issued in 10 self-contained sections. Sections available, and prices, as below :

SECTION 2	VERTICAL RETORTS	7s. 9d.	inc. postage
,, 3	WATER GAS AND COMPLETE GASIFICATION	7s. 9d.	,,
,, 4	COKE OVENS	7s. 6d.	,,
,, 5	REFRACTORIES: COAL AND COKE HANDLING	7s. 9d.	,,
,, 6	GOVERNORS: EXHAUSTERS: STATION METERS	9s. 9d.	,,
,, 7A	GAS COOLING and TAR FOG REMOVAL ..	15s.	,,

SECTIONS 1 & 10 TEMPORARILY OUT OF PRINT

OTHER SECTIONS IN ACTIVE PREPARATION.

FROM

WALTER KING, LTD. 11, BOLT COURT, FLEET STREET, LONDON, E.C.4.

A major contribution by **HOLMES** *at LITCHURCH GAS WORKS*

Photographs reproduced by kind permission of the East Midlands Gas Board

CONDENSERS

HOLMES-CONNERSVILLE EXHAUSTERS

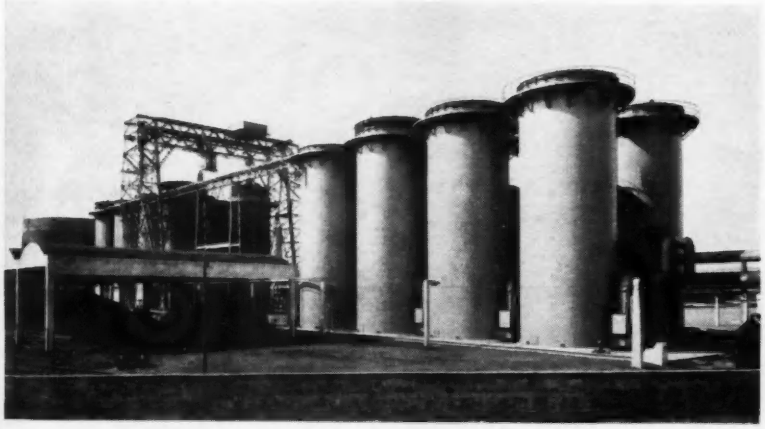
HOLMES-ELEX DETARRERS

AMMONIA WASHERS

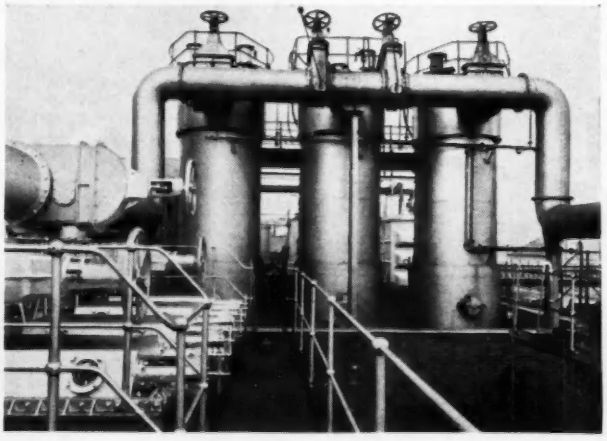
TOWER PURIFIERS

HOLMES-CONNERSVILLE METERS

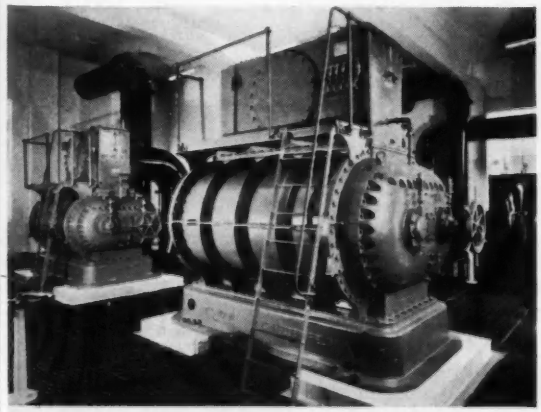
GAS DEHYDRATION PLANT



Tower Purifiers



Holmes-Elex Detarrers



Holmes-Connersville Meters

W. C. HOLMES & CO. LTD

TURNBRIDGE · HUDDERSFIELD

Huddersfield 5280 London: Victoria 9971 Birmingham: Midland 6830

C 8924

J. BROWN & CO. LTD.
SAVILE TOWN, DEWSBURY, YORKS.
Supply:-
"BROWNOX-de-LUXE" PURIFYING MATERIAL
Purchase:- **SPENT OXIDE**

CASES FOR BINDING
Quarterly Volumes of the 'Gas Journal'
7/6 each, post free
Walter King, Ltd., 11, Bolt Court, Fleet Street, London, E.C.4.

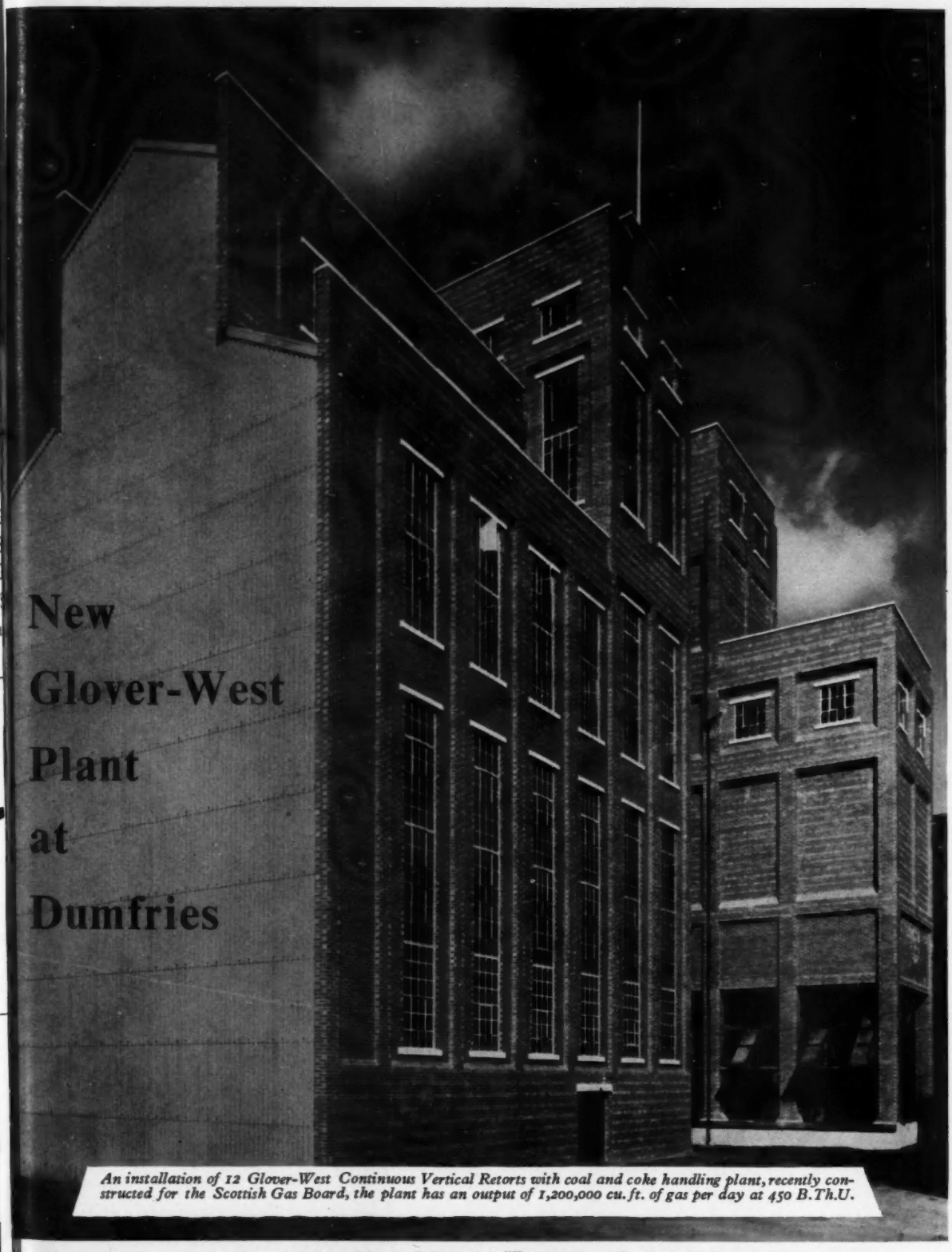
UNDERPRESSURE ENGINEERING CO., LTD.
UNDERPRESSURE CONNECTIONS
LEADLESS SPLIT COLLARS
SOCKET CLIPS
UNION FOUNDRY, MANSFIELD, NOTTS.
ALL TYPES OF DISTRIBUTION MATERIAL IN STOCK
Service Enquiries :
STAFFORD HOUSE, NORFOLK STREET, STRAND, W.C.2
'Phone: MANSFIELD 1256. *'Grams:* CASTINGS, MANSFIELD.
'Phone: TEMPLE BAR 9910 *'Grams:* WASHER, ESTRAND, LONDON.
CENTRAL ACTION DRILL STANDS
STOP COCK BOXES
TOOLS, ETC.

High Grade Refractories
ranging from 34% to 70% alumina
FIRECLAY RETORT MOUTHPIECES
HARRIS & PEARSON LTD.
STOURBRIDGE
Telegrams: FIRECLAY, 'PHONE STOURBRIDGE
'Phone: Brierley Hill 7281 (2 lines)
INSULATING REFRACTORY BRICKS AND SHAPES • AIR SETTING PLASTIC & DRY REFRACTORY CEMENTS for jointing and patching, and strongly recommended a a protective coating to firebrick work.

COAL AND COKE SCREENING & SIZING PLANTS.
RETORT SETTINGS PRODUCERS, FURNACES REPAIRS.
GOODALL, CLAYTON & Co. LTD.
LEEDS.
CONVEYORS, ELEVATORS, BUNKERS, ROOFS, HOISTS, Etc.

EDGAR
— the name to remember for
GAS CARCASSING, CENTRAL HEATING & HOT WATER INSTALLATIONS
WILLIAM EDGAR & SON LTD, BLENHEIM WORKS, GREEN LANE, HOUNSLOW, MIDDX. TEL: HOUNSLOW 8017 (4 lines)

Registered as a Newspaper, Printed by STRAKER BROTHERS LTD., E.C.2 for WALTER KING LIMITED, 11, BOLT COURT, FLEET ST., LONDON, E.C.4., Wednesday, June 19, 1957



An installation of 12 Glover-West Continuous Vertical Retorts with coal and coke handling plant, recently constructed for the Scottish Gas Board, the plant has an output of 1,200,000 cu. ft. of gas per day at 450 B.Th.U.

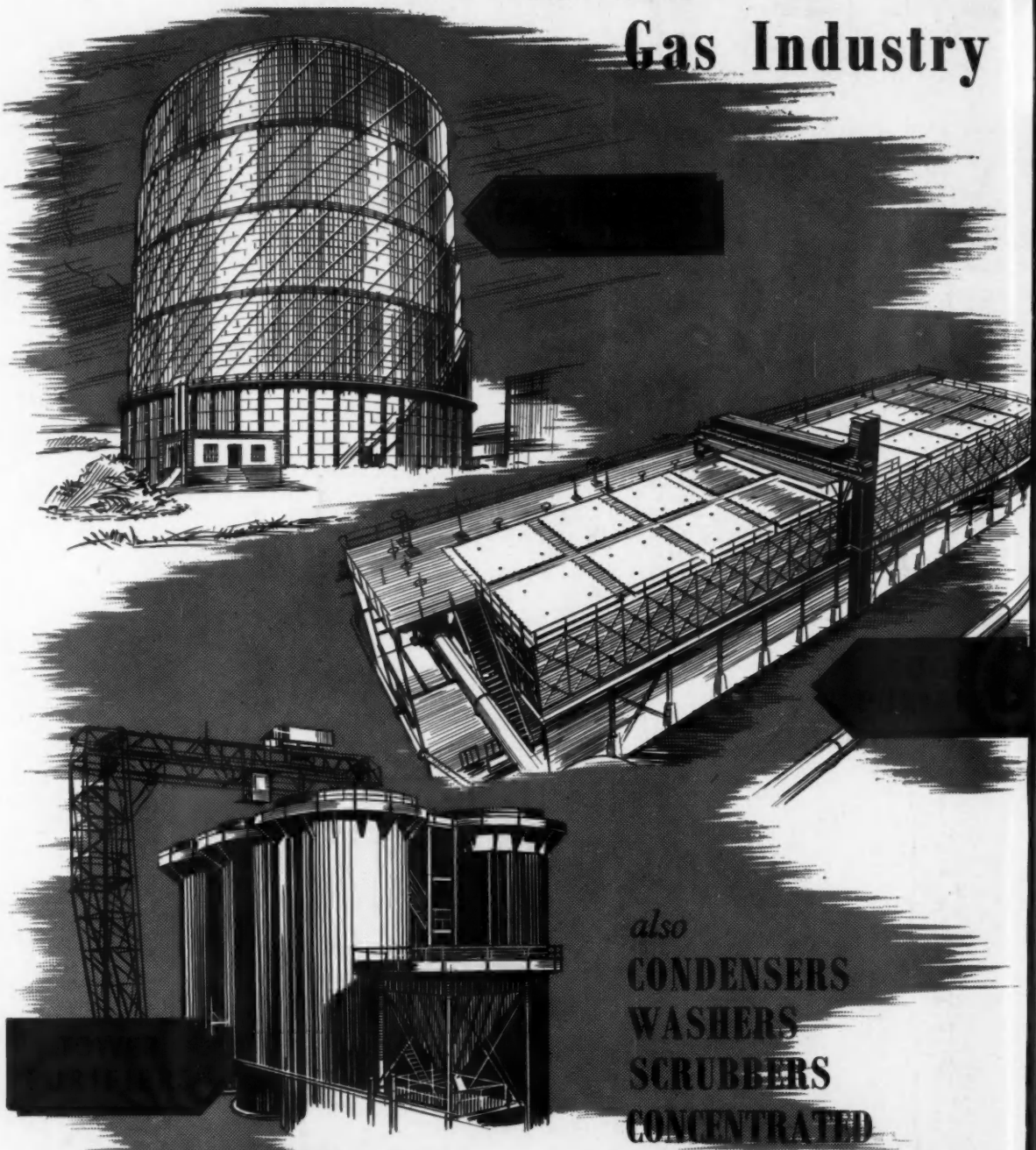
WEST'S GAS IMPROVEMENT COMPANY LTD

ILES PLATTING · MANCHESTER, 10 Tel.: COLlyhurst 2961. Grams.: Stoker, Manchester.

London: Columbia House, Aldwych, W.C.2. Tel.: HOLborn 4108 C.O.L. Div.: Chandos House, Buckingham Gate, S.W.1. Tel.: ABBey 6912.

D 1

Service to the Gas Industry



also
CONDENSERS
WASHERS
SCRUBBERS
CONCENTRATED
LIQUOR PLANT Etc.

Newton Chambers

NEWTON, CHAMBERS & CO., LTD.
THORNCLIFFE, Nr. SHEFFIELD.